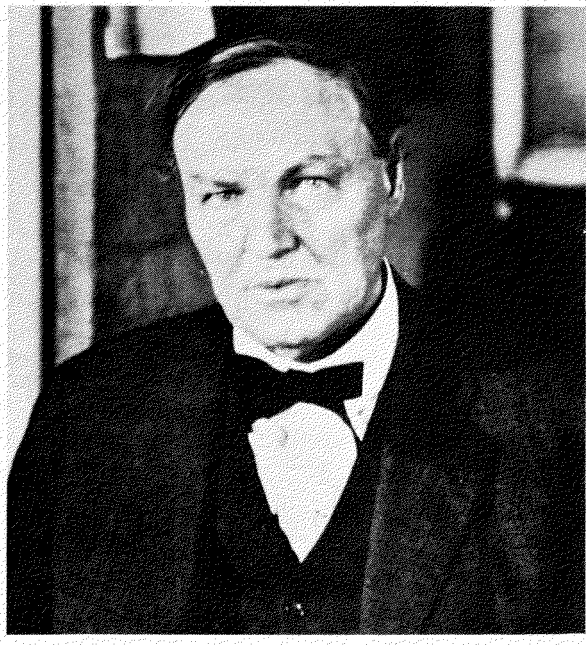
Creation/Evolution



CLARENCE SEWARD DARROW

Issue XXIII CONTENTS Spring 1988

ARTICLES

1 Creationist Misquotation of Darrow *by Tom McIver*

14 The Flood: Mesopotamian Archaeological Evidence *by David MacDonald*

21 Caves and Evolution *by Robert W. Loftin*

28 Paul Ellwanger Strikes Again

FEATURES

30 Book Reviews

36 Letters to the Editor

46 Authors' Guidelines

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

About this issue . . .

Various apocryphal stories circulate in fundamentalist and creationist circles. One of the most pervasive is the claim that a woman called Lady Hope witnessed a deathbed recantation by Charles Darwin. This is committed to print in a tract called *Darwin "The Believer"* by Oswald J. Smith, published by the Free Tract Society, 6012 York Boulevard, Los Angeles, CA 90042. The tale is so clearly fictional that some creationists have taken the time to debunk it themselves in order to spare their movement further embarrassment. For example, see "Darwin's Last Hours" in the December 1975 issue of *Creation Research Society Quarterly* and "Darwin's Last Hours Revisited" in the June 1984 issue. Both articles are by Wilbert H. Rusch, Sr., and effectively answer this oft told legend and its defenders.

However, another apocryphal story that Dr. Rusch doesn't seem to have addressed is growing in popularity. This is the tale of Clarence Darrow's apparent advocacy of the "two model" approach to teaching "origins." Because of its growing use, we decided it would not be prudent to wait for creationist self-correction. So, Tom McIver traced the legend to its probable roots and presents his conclusions in the lead article. If you have additional information, *Creation/Evolution* would be delighted to hear from you. Also, if you know of other interesting creationist folklore that warrants investigation, please tell us about that, too.

CREATION/EVOLUTION XXIII
(Volume 8, Number 2)
ISSN 0738-6001

Creation/Evolution, a publication dedicated to promoting evolutionary science, is published by the American Humanist Association. However, the views expressed herein do not necessarily reflect the views of the association, and the views of the AHA do not necessarily represent the views of the authors. *Creation/Evolution* is published with the following subscription rates: four issues, $12.00; foreign addresses, $15.00; foreign air mail, $20.00. Individual issues, including back issues, are $3.00 each. Ten or more copies of the same issue are $2.00 each. Checks or money orders should be made payable in U.S. funds on a U.S. bank. Please send subscription requests, letters, changes of address, requests for information on reprint rights, article proposals, and other inquiries to:

CREATION/EVOLUTION
7 Harwood Drive
P.O. Box 146
Amherst, NY 14226-0146
(716) 839-5080

Editor: Frederick Edwords *Associate Editors:* John R. Cole and Philip Osmon

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Creationist Misquotation of Darrow

Tom McIver

"It is bigotry for public schools to teach only one theory of origins." So said Clarence Darrow at the *Scopes* trial. Or did he?

This quote—of dubious authenticity and quite possibly apocryphal—has become quite a favorite with creationists. It appears in dozens of articles and books and was quoted in news reports of the Supreme Court hearing of the Louisiana creation-science law. Creationists use the quote as support for their "two model" or "balanced treatment" approach such as that mandated by the Louisiana bill. After all, they triumphantly argue, even Darrow only wanted to allow both "theories" or "models" to be taught and realized that it would be unfair not to permit both sides to be heard in the classroom. Creationists thus claim that the shoe is now on the other foot, that today it is evolution which is taught exclusively in the schools and that creationists are merely trying to redress this unfair monopoly by doing what Darrow himself urged: permitting the opposing theory to be heard. When Darrow spoke, only creationism was permitted to be taught; now, only evolution is allowed. Simple justice, as Darrow supposedly points out in this quote, requires that both be presented.

Acceptance of the Quote

This quote has been repeated so persistently that even noncreationists assume it is of unquestioned authenticity. The *Washington Times*, for example, concluded one article, distributed by Scripps Howard News Service, with this statement:

> Academic freedom is at stake, the creationists contend. They like to ally themselves with Mr. Scopes' attorney, Clarence Darrow, who said in another time that it was "bigotry for public schools to teach only one theory of origins." [Blakemore, 1986, p. 10]

Tom McIver is a Ph.D. candidate in anthropology at the University of California at Los Angeles.

© 1988 by Tom McIver

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Clarence Darrow was, of course, the famed lawyer who defended John Scopes in the celebrated 1925 "Monkey Trial." Scopes was accused of violating the recently passed Tennessee anti-evolution law. When William Jennings Bryan agreed to lead the prosecution team, Darrow offered his services to the American Civil Liberties Union to help defend Scopes in this precedential case.

Typically, creationists repeat the Darrow quote without citing any reference at all. Generally, they state or imply that Darrow made the quote during the trial itself, giving the impression that it is a well-known and undisputed fact.

Norman Geisler, for instance, uses the quote as the epigraph for the second chapter of his book about the 1981 Arkansas creation-science trial, *The Creator in the Courtroom: "Scopes II"* (Geisler, 1982, p. 11). Geisler, a professor of systematic theology at Dallas Theological Seminary, was a witness for creationism in the Arkansas trial. He gives the quote, which is printed in large, bold type, a page all to itself, framed by blank pages before and after. The only attribution is "ACLU Attorney, Clarence Darrow: Scopes Trial, 1925." Geisler also repeats the quote in the main text (p. 19) and twice more in appendices (pp. 200 and 203).

One thing is clear, however: Darrow did not say any such thing during the trial—at least not according to the quasi-official, unedited, published transcript of the entire proceedings, the 1925 book *The World's Most Famous Court Trial* (National Book Company). It is conceivable that the stenographer might have missed a few words, since there was considerable noise and excitement during the trial, and part of it was held outdoors, but it seems most unlikely that such a ringing statement would have been omitted from the complete transcript in the published version considered authoritative by scholars.

Wendell Bird's Role

Those creationists who name a published source for the quote usually cite an article by Wendell Bird entitled "Freedom of Religion and Science Instruction in Public Schools" (1978). John Eidsmoe, for instance, in his book *The Christian Legal Advisor*, cites Robert O'Bannon as quoted in Bird (Eidsmoe, 1984, p. 213) and follows the quote with, "Thus thundered Clarence Darrow. . . ." Eidsmoe was visiting professor at Oral Roberts University's O. W. Coburn School of Law (the Coburn School of Law has since moved to Pat Robertson's CBN University). His book carries a foreword by John W. Whitehead, the creationist lawyer who heads the Rutherford Institute, a group which supports and defends fundamentalist legal rights. (Eidsmoe also states that Darrow used "Nebraska Man" in the trial [1984, p. 206]. This is another creationist error which is being perpetuated by sheer repetition. "Nebraska Man," based upon a fossil tooth found in 1922 which turned out to be that of an extinct peccary, was never mentioned during the trial—although Osborn, its chief supporter, had indeed needled Bryan about it prior to the trial.)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Wendell Bird's article, "Freedom of Religion and Science Instruction in Public Schools," which popularized the quote, was published in 1978 in the *Yale Law Journal*. Bird, then an editor of the *Yale Law Journal*, won the Egger Prize for this massively documented and exhaustively researched article. In it, he argues that teaching only evolution violates constitutional requirements of "neutrality" regarding religion and proposes the teaching of creation science as a legal remedy. (Robert Bork, then a law professor at Yale, was Bird's adviser for this article.) Bird later became staff attorney at the Institute for Creation Research. The "Resolution for Balanced Presentation of Evolution and Scientific Creationism" (1979b), which he wrote for the widely distributed ICR *Impact* series, became the model for a number of proposed "balanced treatment" laws, including the Arkansas bill, though, at the time, Bird—in line with ICR policy—intended it as a sample "resolution" to be submitted to boards of education rather than as actual legislation.

Bird is now an attorney with an Atlanta firm and is also a member of the Rutherford Institute. (F. Tayton Dencer, another former *Yale Law Journal* editor and former professor at Coburn, has joined Bird at the Rutherford Institute.) Bird was chief defense counsel for the Lousiana creation science bill. It was he who argued the case before the Supreme Court in December 1986. Bird's main arguments are that evolution is just as religious as creationism, since many denominations and secular faiths support or affirm it, and that the inclusion of creation science in the curriculum would have a primarily secular—not religious—legislative purpose of "neutralizing" teachings of origins. In defense of the latter, he cited the Darrow quote:

> Similarly, addition of scientific creationism to a biology course that exclusively teaches the general theory [of evolution] has the secular legislative purpose of presenting more than one nonreligious explanation of the origin of the world and life. Even Clarence Darrow of *Scopes* trial fame remarked that it is "bigotry for public schools to teach only one theory of origins." [Bird, 1978, p. 561]

The reference Bird gives for the Darrow quote (footnote 225; the article consists mostly of footnotes and legal citations) is: "R. O'Bannon, 'Creation, Evolution, and Public Education 5,' Dayton Symposium on Tennessee's Evolution Laws (May 18, 1974)." It is from Bird's influential and authoritative article that all recent use of the quote derives. This, then—though Bird is often not cited and his source of O'Bannon even less—is the origin of the widespread use today of the quote by creationists.

Proliferation of the Quote

Bird repeated the quote in another ICR *Impact* article, "Evolution in Public Schools

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and Creation in Students' Homes: What Creationists Can Do":

> Is instruction in scientific creationism the Scopes monkey trial again? No—but the present situation is the Scopes trial in reverse. Just as Tennessee in the 1920s excluded evolution and taught only creation, the states in the 1970s exclude creation and teach only evolution. As Clarence Darrow said in behalf of Mr. Scopes, it is bigotry for public schools to teach only one theory of origins.

Bird used the quote again in his preface to Jerry Bergman's book, *The Criterion: Religious Discrimination in America* (1984) about persecution of creationist teachers and students. Bird complains that the evolutionist academic community is now exhibiting the same intolerance it decried during the *Scopes* trial and implies that Darrow made the quote during the trial:[1]

> In contrast to Clarence Darrow during the *Scopes* trial, who claimed that it is "bigotry" for public schools to teach only one theory of origins," the predominant situation is to condemn as religious bigotry any effort to present an alternative scientific explanation along with evolution.

Just two pages prior to this, John Eidsmoe, in the foreword to Bergman's book, also repeats the quote:

> For that's exactly what it comes down to—religious bigotry. Clarence Darrow declared in the Scopes trial, "It is bigotry for public schools to teach only one theory of origins." And, I would add, it is hypocrisy to teach only one of the scientifically tenable theories of origins and prate about academic freedom at the same time!

Bergman himself used the quote in his 1979 booklet, *Teaching About the Creation/Evolution Controversy*, a volume in the Phi Delta Kappa Educational Foundation's *Fastback* series. He cites Bird's *Yale Law Journal* use of the quote.

As is dismayingly typical with creationists, and with fundamentalists generally, the quote is passed on from writer to writer—usually with no reference and never with any attempt to check original sources for accuracy. It says what they want to believe, so they assume it is true. Often, the quote acquires some additional emphasis

---

1. Perhaps as an attempt to pre-empt charges of misquotation, Bird inserted the "let the children have their minds kept open" quote (discussed later in this article) in a June 1987 mailing sent to members of the Creation Science Legal Defense Fund, correctly attributing it to Dudley Field Malone (not Darrow). Bird had by this time received a draft of this paper for comments.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

or embroidery in the retelling, as in Eidsmoe's statement that it was "thundered" by Darrow. In a debate against Frank Awbrey held at Christian Heritage College—ICR's home turf—Duane Gish, ICR's second in command and foremost creationist debater, likewise proclaimed that Darrow "thundered" at the *Scopes* trial that "it is biogtry to teach only one theory of origins."

Elmer B. Sachs, in a booklet called *Who Fathered "Mother" Nature?*, credits Darrow as saying:

> It is bigotry for American schools to be permitted to teach a "One-Sided" theory on the origins of life and species, to the utter exclusion of another theory. [1980]

Sachs declares that evolution is a Trojan Horse of atheism and communism and should not be allowed in the schools at all. In denying God the creator, evolutionists attribute creation to Mother Nature, who Sachs derides as a "myth but never a 'mythess.' "

Unlike Sachs, whose booklet may not be taken seriously by many people, televangelist D. James Kennedy most certainly *is* taken very seriously. Kennedy, pastor of Coral Ridge Presbyterian Church in Florida, delivered the keynote address at the 1986 International Creation Conference held in Pittsburgh, Pennsylvania. This lecture was later broadcast on his weekly telecast, and tapes and transcripts are distributed free. In this address, "Origins: Creation or Evolution?" a minor masterpiece of misleading statements and distorted evidence delivered with exquisite rhetorical skill, Kennedy said this:

> In the Scopes trial of 1925, Clarence Darrow, the attorney for the evolutionist, said at a time when only creationism was being taught in the schools of Tennessee, "It is the height of bigotry for only one theory of origins to be taught in our schools." Today, the bigotry is on the other foot.

(Kennedy, who in 1985 sent to his national television audience a petition addressed to the California Department of Public Instruction, aimed at preventing the presentation of evolution as fact, later circulated a similar petition urging confirmation of Judge Bork for the Supreme Court.)

Lane Anderson repeats the quote in an article in *Issues and Answers*, adding:

> However, today the Evolutionists are trying to use similar logic to censor Creation Education in the public schools. Their own attorney, Clarence Darrow, would be ashamed of them. [Anderson, 1987, p. 3]

Issues and Answers is a fundamentalist newspaper published by the Caleb Campaign

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(Student Action for Christ). Strongly creationist, it is distributed free in many public schools. This distribution was the subject of a 1987 court case in Pennsylvania in which John Whitehead and another Rutherford Institute attorney successfully defended the rights of students to distribute the newspaper in school.

The Forerunner, a newspaper published by Maranatha Campus Ministries and widely distributed on college campuses across the country, repeated the quote in an article called "Who's Censoring You?" (Hogancamp, 1983, p. 19). Maranatha, sponsor of the 1987 National Creation Conference, recently started up a Society for Creation Science. "The goal of SCS," wrote national director David Skjaerlund in a letter to me, "is to present the biblical truths and scientific evidences for creation versus evolution on every major college campus in the world." Currently, they are presenting creation science seminars at a number of colleges; their stated aim is to teach creationism as an accredited college course on every campus.

Cal Thomas, a syndicated columnist who was a Moral Majority vice-president under Jerry Falwell, repeats the quote in *Book Burning*, a book in which he accuses evolutionists and other secular humanists of censorship directed against fundamentalists. After quoting a speech by Norman Geisler to a U.S. Senate prayer breakfast, in which Geisler invokes Darrow's quote, Thomas concludes: "Curious, isn't it, that secularists who go to court to ban a point of view from a textbook are not called censors?" (Thomas, 1983, pp. 70 and 71).

Ellen Myers, vice-president of the Creation Social Science and Humanities Society, cites the quote and Thomas's comment in a review of Thomas's book in the *Creation Social Sciences and Humanities Quarterly* (1984, p. 23).

One of the most prominent uses of the quote is in Arlie J. Hoover's book, *The Case for Teaching Creation*. Hoover uses the quote twice (1981, pp. 8 and 82). It is, in fact, the book's motif; the book concludes with it: "We close by repeating the words of Clarence Darrow: 'It is bigotry for public schools to teach only one theory of origins.' "

Tracing the Source

Bird, whose article spread the quote, cites as his source O'Bannon's 1974 Dayton symposium piece. Finding no listing of this in any library, I wrote to Bryan College in Dayton, Tennessee, to see if they knew of it. Bryan College, an evangelical Bible-based institution, was founded in Dayton—the site of the *Scopes* trial—shortly after the trial in honor of William Jennings Bryan. I received a prompt and generous reply from Richard Cornelius of the English department, who has written about the *Scopes* trial for the *Tennessee Historical Quarterly* and other publications. Dr. Cornelius sent me a transcript of the symposium cited by Bird, *Return to the Courthouse After Fifty Years: Proceedings of the Dayton Symposium on Tennessee's Evolution Laws, Held in the Rhea County Courthouse, Dayton, Tennessee, May 18, 1974.*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The symposium was sponsored by the Rhea County Historical Society, the Continuing Education Division of the University of Tennessee, and the Philosophy Department of the University of Tennessee at Knoxville.

One of the symposium panelists was Frederic Le Clercq, a law professor at the University of Tennessee at Knoxville, who wrote a prescient warning about the re-emergence of creationist legislation that same year (1974) in the *Vanderbilt Law Review* entitled "The Monkey Laws and the Public Schools: A Second Consumption?" (the article was reprinted in a 1974 issue of *American Biology Teacher* as "The Constitution and Creationism").

Robert O'Bannon is a biology professor at Lee College in Cleveland, Tennessee. Unlike Le Clercq, O'Bannon supports the teaching of creationism in public schools. The paragraph in which he quotes Darrow reads:

> This brief overview of the creation-evolution issue should be sufficient to demonstrate that neither view can claim scientific verification nor a non-religious position. Every man must ultimately decide which position is supported by the stronger inferences. Academic freedom as well as intellectual honesty demands that each person be given equal opportunity to investigate both propositions. To do otherwise is to enslave men's minds and spirits by a kind, polite but subtle totalitarianism. Clarence Darrow himself would never have supported the state of affairs public education has produced today for he insisted that "it's bigotry for public schools to teach only one theory of origins."
>
> [1974, p. 9]

O'Bannon gives no source for the quote. I asked him recently where it came from and whether he had intended it as a direct quote, as the transcript indicated, or merely a paraphrase. O'Bannon, who was very courteous and open, said it was a direct quote and that he got it from the Griggs reference cited elsewhere in his symposium talk.

That reference is listed simply as "J. F. Griggs, *Science and Scripture, 4*, 26 (1974)." *Science and Scripture* is a magazine which was published in the early 1970s in Beaumont, Texas, by Michael Leon Trapasso. Staff writers included Harold Clark, William Tinkle, Harold Slusher, and other now well-known creationists. In 1973, the magazine was taken over by the Creation-Science Research Center of San Diego, which published a few more issues, including the one in question.

Robert Kofahl, a CSRC staff scientist, kindly sent to me a complete reference to the article cited by O'Bannon: "Is the Public School the Established Church?" by Jolly F. Griggs in *Science and Scripture* (March/April 1974), 4:2:23–29. The quote appears on page twenty-five: "Clarence Darrow rightly observed during the famous Scopes Trial, 'It's bigotry for the public schools to teach only one theory of origins."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Griggs, it turned out, sometimes attends meetings at the same local creation science group that I do (the San Fernando Valley chapter of the Bible-Science Association). He also heads his own group, the Creation Science Association of California in Ventura, but his group apparently exists primarily for purposes other than meetings. When I called to ask about the quote, Griggs responded readily and tried to be as helpful as he could.

Griggs modestly volunteered that his *Science and Scripture* article was a "trivial essay" that he had not intended as a scholarly reference. The Darrow quote was written from memory, without the aid of a written source. For this reason, he said, he intended the quote as a paraphrase, not a direct quote. He had heard it orally from a Baptist preacher in Denver who died some years ago. Griggs emphasized, however, that this preacher was quite trustworthy, so even though paraphrased, he is sure that the quote is accurate. The preacher himself got it from a Dayton newspaper account around the time of the trial, he thinks. Griggs believes the reporter probably heard Darrow say it before the actual court proceedings, though he is not sure whether it was a public statement or something said during an interview.

Griggs also mentioned that Bird had called him some time before seeking to check the accuracy of the quote—before Bird wrote his *Yale Law Journal* article, Griggs thinks. Griggs also thinks that Bird had found it in another source as well, probably a book. I had written to Bird before talking to O'Bannon and Griggs, requesting the source of the quote and its authenticity; as yet, almost two years later, he has not replied.

This is as far as I have followed the trail. However, a potential, and somewhat ironic, source for the quote occurs in the play *Inherit the Wind*. Drummond (Darrow), in interrogating Brady (Bryan) during the trial over the right of Cates (Scopes) to teach evolution, begins to close in:

> *Drummond:* Is that the way of things? God tells Brady what is good! To be against Brady is to be against God! *[More laughter]*
>
> *Brady: [Confused]* No, no! Each man is a free agent—
>
> *Drummond:* Then what is Bertram Cates doing in the Hillsboro jail? *[Some applause]* Suppose Mr. Cates had enough influence and lung power to railroad through the State Legislature a law that only Darwin should be taught in the schools?
>
> *Brady:* Ridiculous, ridiculous! There is only one great truth in the world—

No one to my knowledge—either in Darrow's time or in ours—has attempted legislation to require the teaching of evolution. That would, indeed, constitute a "Scopes trial in reverse." But could it be this exchange in the play that lies at the root

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of our quote?

Of course, the quote could have originated in a local newspaper account around the time of the trial, but I seriously doubt it. And even if it did, I would question its accuracy. Unless it was uttered in some strange context, it makes no sense for Darrow to have said any such thing. Edward Larson—a lawyer, science historian, and author of *Trial and Error* (1985), a legal history of the creationism controversy in America—told me that he has seen no evidence of such a statement by Darrow, although he himself tried to track it down. More importantly, Larson points out that it goes against Darrow's trial strategy and entire record. The issue at the time was whether or not evolution should be taught in the public schools. Larson notes that "biblical creationism was not (and according to Darrow's opponent William Jennings Bryan should not be) taught in public schools." Bryan, though he had become a champion of fundamentalism, conceded that biblical creationism should not be taught in tax-supported public schools. His argument was that, since the Genesis account could not be taught, evolution should not be taught either (at least not as established fact). This was the intent of the 1925 Tennessee anti-evolution law: to ensure that evolution would not be taught, since it was held to conflict with the biblical account of creation. In other words, the law Bryan was defending was intended to enforce neutrality not by requiring that both theories be taught, as creationists now demand, but by prohibiting the teaching of evolution. While Bryan wanted neither taught in public schools, Darrow was challenging the law in order to allow the teaching of evolution. As Larson wrote in a letter to me: "Why then would Darrow say that it was bigotry to teach only one view of origins? The Dayton public schools were only teaching one view—evolution—and that was what Darrow was trying to defend." Darrow defended the teaching of evolution in public school science classrooms because evolution is scientific. The biblical account of creation is not scientific, he argued, and he did not want it taught as science.

Another Misquote

There is another glaring misquotation of Darrow in this regard. It appears in *Origins—Two Models: Evolution or Creation*, a 1983 video tape from ICR. This video is intended for public school use. On the surface it seems scrupulously fair, balanced, and scientific—given the assumption, of course, that creationism is a valid competing scientific theory. The video presents both the evolution and creation science "models."

The opening scene of the ICR video is a reenactment of the *Scopes* trial. (Several recent creation science films and videos open with *Scopes* trial footage or scenes shot in front of the Rhea county courthouse. The "Scopes trial in reverse" motif is extremely popular.) In this ICR reenactment, Darrow delivers an im-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

passioned plea:

> For God's sake, let the children have their minds kept open! Close no doors to their knowledge; shut no door to them. Let them have both evolution *and* creation! The truth will win out in the end.

This is the same argument: namely, that today it is the dogmatic evolutionist establishment which is indoctrinating schoolchildren and not allowing the other side—creation science—to be heard. The video narration continues:

> Since the Scopes Trial, much research has been done on origins, and a complete reversal of opinion has occurred. The majority of the world's scientists now believe in evolution. And evolution is now the accepted dogma and is treated as fact in the public schools. However, there has been a growing disenchantment among scientists around the world concerning evolution. Thousands of once evolutionary scientists are now doubting the validity of long-held beliefs of how evolution actually occurred. Without referring to the Bible and other religious literature, a significant number of scientists are finding that a creation account of origins fits the scientific evidence better. And recent public opinion polls suggest that a large percentage of the public favors a return of creation-science to America's public school science curriculum. Unquestionably, two scientific models of origins exist, both with prominent scientists supporting them. Meanwhile, evolution continues to be the accepted dogma and treated as fact in the majority of America's public schools. However, the revolutionary ideas of Clarence Darrow have been revived, and a remedy to this situation has been proposed, this time by prominent contemporary *scientists.*

This video dialogue and narration is also included in the accompanying handbook, *A Video Guide to Origins—Two Models: Evolution-Creation* (Bliss, 1984a, pp. 91–92). Bliss also repeats the Darrow plea in a *Forerunner* article (1984b, p. 10).

But Darrow's eloquent plea, which is so dramatically reenacted in the video, is misquoted, resulting in a most serious distortion of meaning and intent. In fact, this misquoted plea was not even uttered by Darrow but by his co-attorney, Dudley Field Malone. What Malone actually said was this:

> For God's sake let the children have their minds kept open—close no doors to their knowledge; shut no door from them. Make the distinction between theology and science. Let them have both. Let them both be taught.
>
> [National Book Company, 1925, p. 187]

This is far different. Malone urged that the children be taught both *science*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(that is, evolution) and *theology*—and by theology he does not mean creation science. Significantly, he urges that these be kept separate, that they not be confused. Theology should not be taught in the science classroom and especially not as an equally valid *scientific* explanation (as the ICR implies Darrow intended for creationism). In short, religious theories should not intrude in the science classroom.

This highly misleading misquotation is also being passed on between creationists. Paul Bartz, the editor of *Bible Science Newsletter*, in an article entitled "The Shocking Truth About the Scopes Trial," says:

> Darrow, in defending Scopes, argued that both creation *and* evolution should be allowed in the classroom: ". . . let the children have their minds kept open . . . close no door to their knowledge . . . shut no door to them . . . let them have both evolution and creation . . . the truth will win out in the end." The claim by dogmatic evolutionists that Scopes was a victory for their position is based on mythology, since Darrow, in defending Scopes, took the very position they condemn. [1984, p. 3]

Bartz gives no reference for the quote. When I asked him about it, he wrote back that it can be found in the transcript of the trial. He acknowledged that he himself had not seen it in the transcript, however; he had gotten it from Eidsmoe.

This revisionist picture of Darrow's argument by modern creationists was embraced by Judge Thomas Gee of the Fifth U.S. Circuit Court of Appeals. Eight of the fifteen judges of this court voted not to reconsider the Louisiana creation science law. It was because of the closeness of this vote that Louisiana successfully took the appeal to the U.S. Supreme Court. Gee, who wrote the strongly dissenting opinion for the seven judges who favored the bill, argued that, "by requiring that the whole truth be taught, Louisiana aligned itself with Darrow." ACLU national director Ira Glasser commented that Gee's comparison would make Darrow turn over in his grave.

When the Supreme Court struck down the Louisiana Balanced Treatment Act in 1987, Justice Scalia argued similarly in his sharply dissenting opinion. Scalia's opinion (to which Chief Justice Rehnquist, the other dissenting judge, added his concurrence) excoriated the majority for its repressive "Scopes in reverse" policy. Scalia blamed the majority's refusal to consider creation science as scientific rather than religious on the "facts and the legend of Scopes." The Scopes "legend," he complained, has predisposed the Court to erroneously interpret all attempted constraints on the teaching of evolution as a manifestation of fundamentalist repression. But, he went on:

> The people of Louisiana, including those who are Christian fundamentalists, are quite entitled, as a secular matter, to have whatever scientific evidence there may be against evolution presented in their schools, just as Mr.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Scopes was entitled to present whatever scientific evidence there was for it.

Many creationists, such as Bartz, express great indignation at misinterpretation of the *Scopes* trial by evolutionists. They profess to be outraged at perpetuation of "myths" about the trial and careless acceptance of inaccurate and propagandistic versions. It is odd, therefore, that they are so eager themselves to accept quotes ostensibly from the trial without checking for accuracy. Bartz, for instance, continues to chide evolutionists for errors and inaccuracies regarding the trial. "If Zimmerman's research had been carefully done from original resources," he remarked reprovingly of one such critic, "he might have avoided discrediting himself" (1987, p. 3).

It is quite true that the *Scopes* trial has assumed a mythic status in our culture and history. The 1960 movie, and before that the play, *Inherit the Wind* has further distorted many people's perception of the case. Creationists protest showings of this film in schools as a documentary account. They have a valid point: the film presents a melodramatic, fictionalized caricature of the trial and the issues. In *Inherit the Wind*, the Scopes character is arrested while teaching his class and remains in jail throughout the trial. In fact, he was never jailed. The ACLU in New York persuaded Scopes to volunteer to serve as defendant in a test case of the Tennessee anti-evolution law, though he had only reviewed the evolution section of the state-accredited textbook as a substitute biology teacher without actually teaching it. In the movie and play, the Bryan character vehemently protests the hundred-dollar fine which the judge levies against the teacher as too small for such a monstrous crime. In fact, Bryan opposed any penalties for violations of anti-evolution laws and offered to pay Scopes' fine.

However, *Inherit the Wind* was never intended as an accurate, factual reenactment (though many people are unaware of this). The film quite closely follows the play (which appeared on Broadway in 1955), as does the 1988 television remake. It should be noted that the playwrights, Jerome Lawrence and Robert E. Lee, specifically caution that "*Inherit the Wind* is not history." It is literature. While conceding that it is clearly based upon the *Scopes* trial, they insist that the dramatic struggle between Bryan and Darrow had acquired "new dimensions and meaning" and that these dimensions are what they attempt to portray. *Inherit the Wind* "is not 1925," they claim. "It might have been yesterday. It could be tomorrow" (1963, p. 3). Their aim is to dramatize timeless issues which transcend the mere facts of the actual case; the fact that they change the names of all the protagonists demonstrates that this is their intention and that they are taking great liberties with actual events. In this spirit, its public school use is appropriate.

It is regrettable that many people forget that the movie version of the case is art, not a trial transcript. But creationists, including those who castigate people for accepting film fiction as fact, have been guilty of very naive myth-mongering

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

themselves. Creationists have shown themselves to be more than willing to believe in and perpetuate serious misquotations and distortions.

References

Anderson, Lane. 1987. "Creation: Science or Religion?—Supreme Court Hears Debate." *Issues and Answers*. 9:12:3.

Bartz, Paul. 1984. "The Shocking Truth About the Scopes Trial." *Contrast*. 3:5:3. (Insert in *Bible-Science Newsletter*. 22:9.)

———. 1987. "Errors and Inconsistencies in the Origins Debate." *Bible-Science Newsletter*. 25:10:3, 13.

Bergman, Jerry. 1979. *Teaching About the Creation/Evolution Controversy*. Bloomington, IN: Phi Delta Kappa Education Foundation. ("Fastback" series No. 134.)

———. 1984. *The Criterion: Religious Discrimination in America*. Richfield, MN: Onesimus Publishing.

Bird, Wendell. 1978. "Freedom of Religion and Science Instruction in Public Schools." *Yale Law Journal*. 87:3:515–570.

———. 1979a. "Evolution in Public Schools and Creation in Student's Homes: What Creationists Can Do." ICR *Impact* series no. 69. (Insert in *Acts and Facts*.)

———. 1979b. "Resolution for Balanced Presentation of Evolution and Scientific Creationism." ICR *Impact* series no. 71. (Insert in *Acts and Facts*.)

Blakemore, Marsha. 1986. "Humiliation of Child Leads to High-Court Evolution Case." *Washington Times*. December 30, pp. 1A, 10A.

Bliss, Richard. 1984a. *A Video Guide to Origins—Two Models: Evolution-Creation*. Public school edition. El Cajon, CA: Institute for Creation Research.

———. 1984b. "It's Time to Challenge Evolution." *The Forerunner*. III:4:10.

Eidsmoe, John. 1984. *The Christian Legal Advisor*. Milford, MI: Mott Media.

Geisler, Norman. 1982. *The Creator in the Courtroom: "Scopes II."* Milford, MI: Mott Media.

Griggs, Jolly F. 1974. "Is the Public School the Established Church?" *Science and Scripture*. 4:2:23–29.

Hogancamp, Kathy. 1983. "Who's Censoring You?" *The Forerunner*. III:8:19–20, 23.

Hoover, A. J. 1981. *The Case for Teaching Creation*. Joplin, MO: College Press (Know the Truth Books).

Keith, Bill. 1982. *Scopes II: The Great Debate*. Shreveport, LA: Huntington House.

Kennedy, D. James. 1986. "Origins: Creation or Evolution?" Published transcript. Ft. Lauderdale, FL: Coral Ridge Ministries.

Larson, Edward. 1985. *Trial and Error: The American Controversy Over Creation and Evolution*. New York and Oxford: Oxford University Press.

Lawrence, Jerome, and Lee, Robert E. 1963, 1951. *Inherit the Wind*. New York: Dramatists Play Service.

Le Clercq, Frederic. 1974. "The Monkey Laws and the Public Schools: A Second Consumption?" *Vanderbilt Law Review*. 27:2:209–242.

Myers, Ellen. 1984. Review of *Book Burning* in *Creation Social Sciences and Humanities Quarterly*. VI:3:22–24.

National Book Company. 1925. *The World's Most Famous Court Trial*. Cincinnati, OH: National Book Company.

O'Bannon, Robert. 1974. In *Return to the Courthouse After Fifty Years: Proceedings of the Dayton Symposium on Tennessee's Evolution Laws, Held in the Rhea County Courthouse, Dayton, Tennessee, May 18, 1974*. Published transcript.

Sachs, Elmer. 1980. *Who Fathered "Mother" Nature?* Bakersfield, CA: Sky Pilot Press.

"Should Public Schools Teach Creation Science?" *Christianity Today*. 31:13:50.

Thomas, Cal. 1983. *Book Burning*. Westchester, IL: Crossway (Good News).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Flood: Mesopotamian Archaeological Evidence

David MacDonald

The assertion of some historians and archaeologists that a great flood devastated a region of Mesopotamia at the dawn of history and that this event was the origin of the biblical Flood story has become a curious backwater in the debate over creationism. The topic has not proved of major concern to either the advocates of recent-creationism or to their scientific opponents. It has, however, given considerable, if probably unwarranted, encouragement to day-age creationists, gap theorists, and those who hope to reconcile apparent contradictions between scripture and science.

Within a few months of one another during the 1928–1929 excavation season, archaeologists at two southern Mesopotamian sites, Ur and Kish, announced the discovery of flood deposits which they identified with the Flood described in the Hebrew scriptures and cuneiform sources. The famous and glamorous Sir Charles Leonard Woolley, after his deep excavations of the Early Dynastic royal tombs at Ur, had a small test shaft sunk into the underlying soil. He persisted through some eight feet of bare mud before finally coming to a layer bearing artifacts of late prehistoric date. It did not take Woolley long to arrive at an interpretation:

> I . . . by the time I had written up my notes was quite convinced of what it all meant; but I wanted to see whether others would come to the same conclusion. So I brought up two of my staff and, after pointing out the facts, asked for their explanation. They did not know what to say. My wife came along and looked and was asked the same question, and she turned away remarking casually, "Well, of course, it's the Flood." [1954, p. 27]

Woolley's first test pit was very small, so during that and the next season he had dug a number of other test shafts, including an enormous pit, seventy-five feet by

---

David MacDonald holds a Ph.D. in ancient history from the University of Minnesota. He currently teaches in the history department of Illinois State University.

© 1988 by David MacDonald

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sixty feet and sixty-four feet deep. In this main pit, he encountered a deposit of clean, apparently water-laid soil up to eleven feet thick. Evidence of the Flood was absent from several shafts and uncertain or disturbed in a number of others. But in many, Woolley felt he had certain evidence of the Flood (1955).

Just slightly before Woolley's initial discovery, S. Langdon and L. Watelin encountered smaller flood levels at Kish (Watelin, 1934). Although the Kish discovery actually predated Woolley's find at Ur, Woolley published first (Woolley, 1929) and received the lion's share of the initial publicity. Woolley, moreover, produced a highly successful popularization of his work in which the Flood finds were recounted in a manner that is at once simple, authoritative, and filled with references to familiar biblical materials (Woolley, 1929, 1954, 1982). The finds from Ur achieved and maintain a predominant place in the public mind.

Initially, some assumed with great eagerness that the flood levels at Ur and Kish were identical and provided marvelous evidence for a historical kernel of the Genesis Flood story (Peake, 1930), but the enthusiasm could not be maintained. The level of the great flood at Ur was sandwiched between remains of the Al Ubaid cultural phase, the last purely prehistoric period of southern Mesopotamia, and a layer of debris from the early Protoliterate period. The great Ur flood, thus, can be dated with a high degree of certainty to about 3500 BCE. Kish, however, produced evidence of two floods at the end of the Early Dynastic I and beginning of the Early Dynastic II periods, around 3000 to 2900 BCE, and a still more impressive flood dating to the Early Dynastic III period, around 2600 BCE. All three of the Kish floods were much later than the great flood at Ur. Watelin argued that the earliest of these three was the deluge of the Bible and cuneiform literature.

Within a few years, excavations of a third Mesopotamian site, Shuruppak, also uncovered a flood stratum (Schmidt, 1931). It is of particular interest because, according to the Mesopotamian legend, Shuruppak was the home of Ziusudra, the Sumerian Noah. (The Sumerian Ziusudra means "life of long days." The Akkadian equivalent, Utnapishtim, is "he found life," while the alternative Atra-hasis means "exceedingly wise.") This flood level separated late Protoliterate and Early Dynastic I remains and dates from around 2950 to 2850 BCE. Perhaps, but not certainly, the Shuruppak flood may be equated with the earliest flood at Kish. No other Mesopotamian sites have produced flood remains of significance (Mallowan, 1964).

Which, if any, of these floods is to be equated with that recounted in the Bible? Despite the assurances of biblical literalists, no exact date or even close approximation can reasonably be derived from Genesis for the Flood or many other events. Simplistic compilation of patriarchal ages in the manner of the famous Bishop Usher is just not adequate. Crucial Hebrew concepts and terms, even those translated by explicit English words, such as *generation*, frequently carry in Hebrew a variety of meanings, some of which are neither commensurate with English nor immediately evident. Biblical geneologies, for instance, can and do sometimes contain

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

omissions (Hyers, 1983, pp. 13–15). Biblical materials by themselves are inadequate to distinguish among the Mesopotamian flood strata.

Mesopotamian flood tales are more useful. Similarities between the account of Noah's Flood in the Hebrew scriptures and the Mesopotamian flood tales are great and obvious. Despite some lesser differences, there is no reasoned body of opinion that claims they are unrelated. The accepted view is that the archetypal account originated in Mesopotamia. The earliest extant Mesopotamian version is far older than the biblical account, and the Flood story bears specifically Mesopotamian details that cannot reasonably be supposed to derive from a Hebrew original. Near Eastern scholars have consequently turned to the cuneiform sources.

The most well-known and detailed Mesopotamian account of the Flood is found in the Gilgamesh Epic (Tigay, 1982, pp. 214–240; for other accounts, see: Lambert and Millard, 1969; Kramer, 1967). Even this account, however, seems to have been somewhat abbreviated because of the literary role that it plays within the broader story of Gilgamesh's confrontation with mortality. Closely parallel are the lengthy but, in part, ill-preserved accounts in the Atra-hasis Epic and the shorter and incomplete Sumerian Deluge Myth. Briefer references to the Flood serve as prefaces to several other myths. Myths are frequently introduced by an abbreviated account of some monumental mythic event, such as the Flood or creation itself. There are other scattered fragments, and a version of the Mesopotamian Flood tale even survives in the sadly incomplete fragments of the writings of the Babylonian priest Berossus, who lived in the late fourth and early third centuries BCE (Lambert and Millard, 1969; Kramer, 1967).

The Sumerian King List also contains a reference to the Flood (Mallowan, 1964, pp. 67–69; Kramer, 1967, pp. 12–13). The King List is a complex document, existing in a number of different editions. Probably first composed about 2100 BCE and extant in an edition from about 1900 BCE, the King List purports to record the kings and dynasties of Mesopotamia from the time when first "kingship descended from heaven" until the time of composition. The list has many weaknesses. Early kings are credited with reigns of such fabulous length that Methuselah's span seems reduced to insignificance, and a number of early dynasties that were in fact contemporary are listed as if they were sequential. Despite these defects, the Sumerian King List appears to preserve the names and sequences of many early real rulers, a number of whom are independently attested elsewhere. The King List claims that, after a number of antediluvian rulers, the Flood swept over everything, after which kingship once again "descended from heaven" and the list of dynasties and rulers resumes. Gilgamesh, hero of the epic, is listed long after the Flood. Thus, the evidence of both the King List and the Gilgamesh Epic, which has Gilgamesh listening to an account of the Flood, agree that he lived well after the Flood.

Although Gilgamesh appears as a mythic character in later Mesopotamian literature, he was, in fact, a real person, and references to contemporaries and near contemporaries allow the calculation of his date. Scholars generally agree with a high

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

degree of certainty that Gilgamesh lived in the period of 2700 to 2600 BCE (Mallowan, 1964, pp. 67–68). How much earlier should the Mesopotamian Flood be placed? The Sumerian King List names twenty-three rulers of the city of Kish between the Flood and a contemporary of Gilgamesh, but there are good grounds for dividing this list into two nonsuccessive segments and reckoning only eleven generations of kings in the interval. Calculating on the basis of the average reign of Mesopotamian kings, no more than about two hundred years ought to be allocated to these kings, placing the Mesopotamian Flood around 2900 to 2800 BCE (Mallowan, 1964, pp. 68–70, particularly p. 69, n. 21a; Kramer, 1967, pp. 16–18).

The period 2900 to 2800 BCE is much too late to fit Woolley's impressive flood remains at Ur, which must be dated at about 3500 BCE. This period does, however, fit well for the two earliest floods at Kish and a flood level at Shuruppak, and many scholars specializing in the ancient Near East have concluded that the Flood stories of cuneiform literature and the Bible find their ultimate origin in the event attested to by the remains at Kish and Shuruppak (Mallowan, 1964, pp. 62–82; Kramer, 1967, pp. 12–18; Woolley, 1955, pp. 16–17. Woolley's findings were generally rejected by others, including his chief archaeological assistant, Mallowan).

What Role Has All This Played in the Creation-Evolution Debate?

Most recent-creationists simply ignore the entire matter. Presumably, the reason is the one set forth by John C. Whitcomb, Jr., and Henry M. Morris in *The Genesis Flood*: the Mesopotamian flood remains fail to agree with the literalist view of a universal flood survived only by Noah and family (1961, pp. 109–111). The Mesopotamian strata, whether at Ur or at Kish and Suruppak, testify only to a local flood which clearly left behind survivors and significant cultural continuity. The Ur flood apparently did not even cover the entire mound of Ur. Moreover, fundamentalists have generally demonstrated little interest in the investigation of possible nonliteral explanations of biblical material.

At the other end of the spectrum, the scientific critics of the recent-creationists also have ignored the Mesopotamian materials. They are concerned primarily with answering the arguments of the recent-creationists, who themselves have not emphasized these nonbiblical materials. Generally, the approach of the scientific critics has been to demonstrate the scientific impossibility of recent-creationist claims rather than to attempt to supply alternative explanations of biblical materials.

A middle ground is held by a wide range of writers—from eccentric catastrophists, through the less-literal day-age, gap, and local-flood creationists, to nonliteralist theologians and secular historians. These groups often accept the equation of the Mesopotamian archaeological finds with the origin of the biblical Flood story. At first glance, this position may appear rational, but, in fact, it is usually based upon

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

religious or other a priori assumptions and, thus, in essentials, is similar to the recent-creationist position. Many in these groups exhibit only superficial acquaintance with the Mesopotamian material—often just that from Ur and usually just through one of Woolley's popularized accounts. They frequently show no awareness of the problems surrounding Woolley's thesis or of alternative interpretations (Thomas, 1966, p. 15; Neil, 1962, p. 32; Hyers, 1983, p. 21, citing Daniel, 1968, pp. 39–47; Hyers, 1984, p. 102).

A few cite the full range of Mesopotamian flood discoveries as confirmation of the biblical Flood story. It is not apparent whether they simply fail to understand that these diverse archaeological discoveries do not pertain to a single event or if they are callously suppressing information that does not conform to their preconceptions (for example, Halley, 1978, pp. 77–80). Others who are primarily concerned with the Mesopotamian sources are well aware of the problems, but nonetheless presuppositions frequently seem to sap their critical abilities. The distinguished scholar Andre Parrot, for example, wrote: "It seems probable, a priori, that a disaster whose magnitude cannot be in doubt must have left traces in the soil of Mesopotamia" (1955, p. 45). The great Sumerologist Samuel Noah Kramer echoes a somewhat similar conviction: "And even among skeptics, there are some who feel that there must be at least a kernel of truth in the Flood-motif; it seems to have played too large a role in Mesopotamian myth and legend for it to have been nothing more than a total fabrication of fancy and fantasy" (Kramer, 1967, p. 13). Actually, there are no compelling reasons to identify any of the floods—at Ur, Kish, or Shuruppak—with the Flood of Mesopotamian literature and the Bible.

Woolley's popularization of his discoveries seems to account for much of the continuing visibility of the Ur flood thesis, but it has little actual claim to be the Flood of Mesopotamian and biblical literature. Despite the thickness of the deposit, it appears like the other Mesopotamian floods to have been a purely local event. Eridu, just seven miles distant, exhibited no sign of the Ur flood, although it was sought diligently there. On about the same or a slightly lower elevation than Ur, Eridu is separated from Ur by only a very low ridge. Equivalent strata at Eridu occupy a higher position on the mound that at Ur, yet no trace of the flood was found at all (Mallowan, 1964, pp. 75–77).

There is, moreover, question of whether memory of an event as early as 3500 BCE could have survived to historic times. The date is too early for a written account to have been made, and the Sumerians do not appear to have had a methodical oral technique that would have long preserved a record of the event. The experiences of other cultures indicate that even the most traumatic events tend to fade from memory after a few generations in the absence of either writing or a highly developed oral procedure, such as formulaic oral poetry.

The hypothesis that the flood levels at Kish and Shuruppak represent the same event is no more than an assumption. Flood events occurred with frequency throughout southern Mesopotamia, as the two separate early flood levels at Kish

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

indicate. Even more so than the Ur flood, the flood levels at Kish and Shuruppak fail to fulfill the biblical or even the Mesopotamian literary descriptions. In the degree to which those descriptions are "rationalized," any criteria for distinguishing between the biblical Flood and virtually any other flood disappear. The flood remains at Kish and Shuruppak are hardly imposing. The silt at Kish averages less than ten inches thick, and the deposit at Shuruppak is about fifteen inches—in comparison to up to eleven feet of material at Ur (Raikes, 1967, pp. 52–63). The severity of a flood cannot necessarily be deduced from the thickness of an isolated sample of the flood deposit. It is nonetheless suggestive that thicker, more impressive deposits from another flood have been discovered at Kish, dating too late to be identified with the innundation of the Bible and Mesopotamian literature, and yet that later flood left no record in history (Watelin, 1934, pp. 41–43; Mallowan, 1964, pp. 78–79 and plate XX). All that remains is the possibility that the Kish and Shuruppak materials do represent the same event and coincide chronologically with the date of about 2900 BCE for the Flood of Mesopotamian literary tradition.

The flood materials from Ur, Kish, and Shuruppak were excavated over half a century ago. Woolley's description of the flood level at Ur is far from scientific. It is not even possible to be sure of the exact number of sondages in which he found flood remains. While attempts to dismiss the remains of the Ur flood as merely windblown sand are unsubstantiated and probably unsubstantiatable, the two "scientific" examinations of materials from the Ur flood stratum are, by modern standards, vague and inconclusive. The same situation prevails at Kish and Shuruppak (Raikes, 1967, pp. 52–63). In all probability, the finds do represent floods, but the exact character of those events—fluvial or marine, rapid or slow deposition, unitary or episodic—remains unknown. The hydrology of southern Mesopotamia is very complex. Renewed excavation and modern scientific techniques could probably solve many of these questions, but current political and military conditions would seem to preclude any such activity in the near future. Until the situation changes, there are no compelling grounds on which to conclude that the Flood story found its ultimate beginning in an actual event that has been identified at Kish and Shuruppak or anywhere else in Mesopotamia.

The endemic character of flooding in southern Mesopotamia may well have been sufficient to generate the story about a supreme Flood, and the attachment of that story to a specific, long-passed, ill-known historical context may, in fact, be late and unreliable. The earliest edition of the Sumerian King List certainly includes no list of antediluvian kings, and the presence of reference to the Flood is in doubt. It may first have been added much later, during a period in which the Flood story was popular (Civil, 1969, p. 139). Ultimately, the search for a local Mesopotamian flood upon which a rationalization of the Bible story can be based may prove as illusionary as the search for Noah's ark.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

References

Civil, M. 1969. "The Sumerian Flood Story." In W. G. Lambert and A. R. Millard, *Atra-hasis: The Babylonian Story of the Flood* (Oxford: Clarendon Press).

Daniel, G. E. 1968. *Myth or Legend?*. New York: Capricorn Books.

Halley, Henry H. 1978. *Halley's Bible Handbook*. 24th Edition. Grand Rapids, MI: Zondervan Publishing. Despite many editions, twenty-four by 1965, this book remains a mine of obsolete, slanted, and simplistic interpretations of biblical archaeology.

Hyers, Conrad. 1983. "Genesis Knows Nothing of Scientific Creationism." *Creation/Evolution* XII.

———. 1984. *The Meaning of Creation: Genesis and Modern Science*. Atlanta, GA: John Knox Press.

Kramer, S. N. 1967. "Reflections on the Mesopotamian Flood." *Expedition*. Volume 9, number 4.

Lambert, W. G., and Millard, A. R. 1969. *Atra-hasis: The Babylonian Story of the Flood*. Oxford: Clarendon Press.

Mallowan, M. E. L. 1964. "Noah's Flood Reconsidered." *Iraq*. Volume 26.

Moorey, P. R. S. 1978. *Kish Excavations 1923-1933*. Oxford: Clarendon Press.

Neil, W. 1975. *Harper's Bible Commentary*. New York: Harper and Row. First published in 1962 as *William Neil's One Volume Bible Commentary*.

Parrot, Andre. 1955. *The Flood and Noah's Ark*. London: SCM Press.

Peake, Harold. 1930. *The Flood: New Light on an Old Story*. London: Kegan Paul, Trench, Trubner.

Raikes, R. L. 1967. "The Physical Evidence for Noah's Flood." *Iraq*. Volume 28.

Schmidt, E. 1931. "Excavations at Fara, 1931." *Museum Journal* of the Museum of the University of Pennsylvania. XXII:3-4:193-217.

Thomas, Chan. 1966. *The Adam and Eve Story*. Los Angeles, CA: Emerson House.

Tigay, Jeffrey H. 1982. *The Evolution of the Gilgamesh Epic*. Philadelphia, PA: University of Pennsylvania Press.

Watelin, L. C. 1934. *Excavations at Kish*. Volume IV. Paris: P. Geuthner.

Whitcomb, John C., and Morris, Henry M. 1961. *The Genesis Flood*. Philadelphia, PA: Presbyterian and Reformed Publishing Company.

Woolley, Sir Charles Leonard. 1954. *Excavations at Ur*. London: Ernest Benn. This is an expanded edition of Woolley's original, influential, and popular account, *Ur of the Chaldees* (1929). A revised and updated edition by P. R. S. Moorey has been released, *Ur 'of the Chaldees'* (1982), which tempers Woolley's "strong biblical bias" and curtails his "vivid historical imagination."

———. 1955. *Ur Excavations*. Volume IV: The Early Periods. Philadelphia, PA: Joint Expedition of the British Museum and the Museum of the University of Pennsylvania.

SELF-CORRECTION CORNER

A typographical error appeared on page eleven of *Creation/Evolution* XXII. It was in item thirty-three of John R. Cole's article. The words "21 percent $8,000-below" should have read "21 percent $18,000-below". Please note this correction in your issue.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Caves and Evolution

Robert W. Loftin

The Evidence from Geology

Caves are relatively young, as far as the geological features of Earth are concerned. There are several different types of caves, some of them obviously older than others. Ice caves are probably the youngest kind (Balch, 1970). Sea caves are formed by wave action in soft rocks along the coast; they are seldom very deep and usually do not last long (Warwick, 1976). There are caves in volcanic lava flows which are formed when hot lava cools on the outside first while continuing to flow in the middle, thus finally flowing out of the center and leaving a hollow tube. These form at the time of the volcanic activity and may be very young indeed (Wood, 1976).

There is another class of caves, however, which provides strong evidence that Earth is much older than some creationists would have us believe. Strictly speaking, the creationist view is not tied to any *particular* age for Earth. It is logically possible for a creationist to argue that Earth is very old, even billions of years old, and that the creation took place a very long time ago. However, such arguments are rare among creationists because, despite avowals to the contrary, creationism is linked to certain other beliefs, especially beliefs about the historicity of certain religious texts. For this reason, creationists almost always argue for a very young Earth.

On the other hand, the plausibility of the evolutionist position does depend upon the age of Earth. If Earth is very young, as most creationists insist, there has simply not been enough time for evolution to have taken place. So creationist attacks on evolution often concentrate on the questions regarding the age of Earth. If creationists can show that Earth is roughly ten thousand years old, they prove their case.

One common explanation of the existence of sedimentary rock among creationists is that these sediments were laid down at the time of Noah's Flood (Morris, 1974; Whitcomb and Morris, 1961). Just to cite one example, Henry M. Morris, one of the best qualified and articulate creationists, expresses the point this way:

Robert W. Loftin is a professor of philosophy at the University of North Florida in Jacksonville.

© 1988 by Robert W. Loftin

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

> The creation model, on the other hand, must interpret the [geological] column in terms of essentially continuous deposition all accomplished in a relatively short time—not instantaneously, of course, but over a period of months or years, rather than millions of years. [Morris, 1974, pp. 111–112]

Even if we suppose, for the sake of argument, that it is true that the great sedimentary deposits in the geological column were laid down by the Flood, a position which strains credibility to the uttermost, the existence of *caves* in these sediments shows beyond any reasonable doubt that these formations are much older than the supposed date of the deluge. If Carlsbad Caverns, for example, is some sixty million years old, as the most competent geologists assure us that it is (Hartzog, 1987), then the strata in which the cave was formed must be older still.

Carlsbad Caverns, Mammoth Cave in Kentucky, and many other well-known caves here and abroad are limestone caverns. Limestone solution caves are the most numerous kind in the world, far outnumbering all other kinds put together. They are also the largest. The processes by which limestone caves are formed are still very much in evidence today and can be studied in considerable detail. Limestone is all but insoluble in water, so we know that limestone caverns do not simply dissolve out of the rock like sugar dissolves in water (Picknett, Bray, and Stenner, 1976, pp. 213–266). Limestone is actually *less* soluble in water than granite, and one never finds water-formed caves in granite (Moore and Nicholas, 1964, p. 7).

Despite the fact that limestone caves are called *solution* cavities, they are literally *eaten* or *etched* out of the rock by acid rather than dissolved out like sugar. And compared with dissolution, etching by weak acids is a slow process. The major acid involved is carbonic acid (H_2CO_3), which is produced when carbon dioxide combines with water. Almost all carbon dioxide comes from the activity of plants and animals in the soil rather than from the air (Moore and Nicholas, 1964, p. 8). Carbonic acid acts on the calcium carbonate ($CaCO_3$) in the limestone to produce calcium bicarbonate ($CaCO_2$), which is highly soluble in water. The technical name for solution caves is *phreatic*.

It is important to realize that most limestone caves are not formed by abrasion and erosion in the way that surface features, such as canyons and valleys, are. (Such caves, called *vadose* caves, do exist but are easily identified because they have a very different shape from solution caves. *See,* Anderson, 1974.) Streams often flow through caves and contribute very slightly to the process, but this is almost always a later, secondary development. This is why the general pattern of cave passages so seldom resembles the pattern of watercourses on the surface. Most of them are nearly level, and right-angle bends are common. There are *through caves* in the world, in which water runs in one end and out the other, but this is certainly not the most common type (Halliday, 1974, p. 68). Most caves seem to have been formed underwater by the very slow movement of slightly acid water, rather than by erosion, which is a slow enough process in itself.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Carbonic acid is also responsible for the many stalactites, stalagmites, and other deposits which contribute so much to the beauty and interest of limestone caves (White, 1976, pp. 267–327). These features are formed when calcium carbonate in solution in the water is deposited out, but this process is not one of simple evaporation. The air in most caves, even in the most arid regions, is highly moist; therefore, when water soaking down from above reaches the air of the open cave, it does not lose water to the air and leave minerals behind. This is clearly shown by the composition of the deposits, which consists of almost pure calcium carbonate. When the slightly acid water with its dissolved minerals meets the moist air of the cave, a minute amount of the carbon dioxide leaves the water and goes into the air. This process is almost exactly the reverse of the major process of cave formation, for, when carbon dioxide goes into the air, the solution becomes supersaturated and a small amount of calcium carbonate is precipitated out (Moore and Nicholas, 1964).

The growth of cave deposits of this type is slow at best and far from uniform. It depends upon how much water percolates down through the soil, the temperature, and the season of the year. It also depends upon the amount of vegetation growing in the soil over the cave. This is because the carbon dioxide dissolved in the water comes chiefly from the metabolic action of bacteria in the soil. During the growing season, there is more metabolic activity and, thus, more acid (Moore and Nicholas, 1964).

For this reason, caves in warmer, wetter climates are usually larger and have many more cave deposits than colder, drier caves. This is one factor that indicates that the climate around Carlsbad Caverns in New Mexico was once very different from what it is today. It is difficult to see how such a large cave with massive calcite features could have formed in the arid climate with the sparse vegetation which prevails in the area today (White, 1976, p. 281).

When the attention of creationists is directed to what we know about the chemistry and hydrology of cave formation and cave deposits, they sometimes point to some very rapid processes which superficially resemble the calcium carbonate formations I have discussed (Austin, 1980). For example, on the mortared brickwork of old forts and places of that sort, formations which look to the naked eye like stalactites and stalagmites sometimes form in less than one hundred years. However, those formations are composed of gypsum, which is a salt of calcium sulphate. Unlike calcium carbonate, gypsum is moderately soluble in water, which means that transport and recrystallization can take place much more rapidly (White, 1976, p. 304). There is a whole class of cave deposits called *evaporite minerals* which consist of those minerals which dissolve readily in water. As might be expected, these formations are ephemeral when compared to the carbonates which form all the really large and impressive cave formations. The chemistry of all this is not particularly complex and is very well understood.

To summarize the main points of limestone solution cave formation, it seems that (1) limestone caves must be younger than the rocks they are in, (2) limestone

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

COMPLETE YOUR BACK-ISSUE COLLECTION OF *CREATION/EVOLUTION*

Every back issue of *Creation/Evolution* is still in print. Published articles cover the major areas of controversy between creationists and scientists, creationists and educators, and creationists and mainline clergy. The goal of the journal is to publish articles on all the major stress points between creationism and evolution, thereby creating an available encyclopedia of information useful in countering creationist efforts in the schools, courts, and legislatures of North America and elsewhere.

Most new subscribers quickly order a complete set of back issues. With this in mind, we offer complete sets at a considerable discount. To order all of the issues in this ad, send only $44. Individual back issues are $3.00 each. Ten or more copies of the same issue are $2.00 each. For foreign air mail, add $1.00 per issue. Send your check or money order in U.S. funds, a list of issues you desire, and your name, address, and zip code to:

CREATION/EVOLUTION
7 Harwood Drive, P.O. Box 146
Amherst, NY 14226-0146
(716) 839-5080

ISSUE I:

- Why Creationism Should Not Be Taught as Science—The Legal Issues
- The Fatal Flaws of Flood Geology

ISSUE II:

- Common Creationist Attacks on Geology
- Evidence Supporting a Great Age for the Universe

ISSUE III:

- The Bombardier Beetle Myth Exploded
- The Educational Issues

ISSUE IV:

- Biological Evolution and the Second Law
- Do Gaps in the Fossil Record Disprove Descent with Modification?

ISSUE V:

- Defining "Kinds"—Do Creationists Apply a Double Standard?
- Why Creationism Fails to Meet the Criteria of Science

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

HIGHLIGHTS OF BACK ISSUES

ISSUE VI:

- Arkeology: A New Science in Support of Creation?
- Paluxy Man—The Creationist Piltdown
- Misquoted Scientists Respond

ISSUE VII:

- Answers to Standard Creationist Arguments
- Victory in Arkansas

ISSUE VIII:

- Are There Human Fossils in the "Wrong Place" for Evolution?
- Carbon-14 Dating
- Creation-Evolution Debates

ISSUE IX:

- The Dilemma of the Horned Dinosaurs
- Old-Time Religion and the New Physics

ISSUE X:

- True Vestigial Structures
- Whales: Can Evolution Account for Them?

ISSUE XI:

- Special Issue: The Impossible Voyage of Noah's Ark

ISSUE XII:

- Genesis Knows Nothing of Scientific Creationism
- Scientific Creationists Are Not Catastrophists

ISSUE XIII:

- Design in Nature: A Debate
- Space Dust, the Moon's Surface, and the Age of the Cosmos

ISSUE XIV:

- Creationists, Population Growth, Bunnies, and the Great Pyramid
- But Some of Them *Are* Scientists, Aren't They?

ISSUE XV:

- Special Issue: The Paluxy River Footprint Mystery—Solved

ISSUE XVI:

- The Fossil Record of Perissodactyls
- "Nebraska Man"

ISSUE XVII:

- "Scientific Creationism" and Error
- Man—A Contemporary of the Dinosaurs?

ISSUE XVIII:

- Evolution and Testability
- What Did Karl Popper Really Say About Evolution?

ISSUE XIX:

- Creationists and the Australopithecines, Pithecanthropines, and Neandertals
- Plagiarized Errors and Molecular Genetics

ISSUE XX:

- A Creationist Walk Through the Grand Canyon
- Fossil Insects: Pests of Creation

ISSUE XXI:

- Morality, Religious Symbolism, and the Creationist Movement
- An Astronomical Critique of a Creationist Biblical Chronology

ISSUE XXII:

- Creationism and the New Right Agenda
- Gentry's Tiny Mystery—Unsupported by Geology

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

cave formation processes are slow, since they consist primarily of etching by weak acids, and (3) carbonate cave deposits, such as stalactites and stalagmites, in limestone caves start to form *after* the cave dries out, since deposits result from a loss of carbon dioxide into the atmosphere inside the cave. Thus, cave formation and deposit formation are *sequential*. The time it takes to form the cave must be *added* to the time it takes to form the deposits in the cave; only then can one arrive at a rough estimate of the age of the cave.

This does not mean that cave formation cannot be proceeding in one part of the cave while deposits are forming in another part. Mammoth Cave in Kentucky, for example, has five definite levels. It is thought that these correspond to five different water levels of the nearby Green River and, thus, that the five levels formed at five different times (Tilden, 1968, p. 245). Deposits were forming in one level of the cave while other levels were still being etched out of the limestone. The best way to arrive at a rough estimate of the age of this cave would be to add the time required to form each of the five levels together, since they probably formed sequentially, then add the time for deposits to form in the lowest (youngest) level.

From this kind of calculation, we arrive at an age for Carlsbad Caverns of about sixty million years (Hartzog, 1987). The phase of cave deposits began some five million years ago. It takes a long time for a weak acid to hollow out a cave 1,013 feet below the earth's surface and with a big room large enough to contain fourteen football fields and tall enough for a twenty-two-story building. The largest cave deposit is the Giant Dome which is sixty-two feet high and sixteen feet thick. And the surrounding limestone began to be formed about 250 million years ago as a great barrier reef on the edge of an inland sea (Moore and Nicholas, 1964). The fossils of the organic life that formed the reef are still there.

The Evidence from Biology

It is worth noting that caves sometimes contain life forms which are especially adapted for living in the perpetual darkness of the underground environment (Jefferson, 1976). The most relevant types for our discussion are the *troglobites*, which are species which must spend the whole or a part of their lives in caves and are incapable of survival in other environments. In this, they differ from cave animals which sometimes live in caves or take shelter in caves temporarily but can survive in other habitats. Troglobite is a general term which includes such animals as blind cave salamanders, crayfish, fish, insects, isopods, and so forth (Jefferson, 1976).

Animals in caves provide very interesting subjects for the study of evolution. For one thing, evolution seems to have "gone backward" here in a sense, for highly evolved organs such as eyes are often lacking in cave animals. It has often been pointed out that most mutations are harmful, and, in some environments, poor eyesight is one of the most detrimental of all mutations. In most habitats, animals

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

with poor eyeseight would be eliminated. But in caves where eyesight is no advantage, many animals have lost it. This shows how rapidly an important organ can atrophy and be eliminated by natural selection if it is no longer advantageous (Barr, 1968).

Blind cave animals are descended from sighted animals which formerly lived outside or in the twilight zone of caves. Many of them have vestigial eyes, often only tiny spots or, in some species, fairly complete eyes tightly covered with skin. In some of the salamanders, for which there are two distinct stages of growth, the young stages have eyes which are lost as the animal matures (Brandon, 1971). This is very difficult to explain with the creation model. If the creator created blind cave animals especially for subterranean environments, there does not seem to be any convincing reason why he would have given them eyes at all, of *any* kind or at *any* stage of their life cycle.

The geographical distribution of cave animals, particularly the larger ones such as fish, crayfish, and salamanders, also fits the evolution model very well. From the evolution model, one would expect a given cave animal to have a very limited geographical distribution, in most cases confined to a single cave system or, perhaps, a small region with many caves which are connected, perhaps in unobvious ways, or which were formly connected. In general, troglobionts seem to fit this pattern (Jefferson, 1976).

For example, the Valdina Farms salamander, *Eurycea troglodytes*, is known only from a single cave in Medina County, Texas. It has eyes, but they are covered with skin. It is very closely related to the Texas salamander, *Eurycea neotenes*, which lives on the surface in springs, seeps, and small streams near the Balcones escarpment in central Texas. It is easy to see how, in times past, a small population of the Texas salamander became established in this one cave and became more and more unlike the parent stock, gradually losing its eyes and becoming paler in the process. The Tennessee cave salamander, *Gyrinophilus pallecucus*, seems to fit the same pattern. It is very closely related to forms that live outside caves (*Gyrinophilus porphytiticus* and *Gyrinophilus danielsi*), but it is paler and has much reduced eyes. It also has a much more limited distribution (Conant, 1975).

The Grotto salamander, *Typhlotriton spelaeus*, of the Ozark Mountains of Arkansas, Missouri, and Oklahoma, is a somewhat different case. In this instance, the salamander spends only its adult life in the deep part of caves. The larvae have working eyes and are well pigmented. The larvae first live outside the cave in springs and small streams; later they move into a cave, lose their pigment, and the eyelids grow shut. As one would expect, this is a much more widespread species than the obligatory troglobites which spend their entire life cycle in the subterranean environment (Conant, 1975).

What the creationists would *like* to say about these unique animals with their very special habitats is that God created these particular creatures for these special caves as a special act that was a part of his divine plan. But this scenario con-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tradicts one of the creationists' major tenets. You will recall that creationists hold that the great sedimentary limestone formations of the world, chock full of fossils, are the debris of Noah's Flood. Creation was completed long *before* the Flood. So, where did the blind cave animals live before there were limestone solution caves for them to occupy? Almost none live in any other type of cave (a very few live in sea caves, but all of them are fish; none are salamanders, crayfish, or insects). Creationists can only reply that there must have been other caves before the Flood laid down sedimentary rocks so that caves could form for the troglobites to inhabit. Creationists cannot say that this special act took place *after* the Flood, because that would be long after the world was completely finished, according to the opening chapters of Genesis.

On the other hand, evolution has no difficulty explaining where troglobites lived before there were limestone solution caves. troglobites simply didn't exist before there were caves for them to live in. According to evolution, the development of new life forms is a continuous process, ongoing and far from complete.

Blind cave animals provide some of the most clear and convincing examples of vestigial organs one can find anywhere. Vestigial organs are one of the main lines of evidence for evolution, but much that has been said about them seems farfetched. It has been suggested, for example, that the human veriform appendix is a vestigial intestine. This seems no more plausible than the absurd idea that since human males have undeveloped breasts there must have been a time when both males and females nursed the young—if not in humans, then in their ancestors. So far as I know, no one has ever suggested *that!* Many male mammals have undeveloped breasts, but nobody regards them as vestiges of a time when both sexes nursed. However, it is quite obvious that the undeveloped eyes on a cave salamander or crayfish are vestiges of a time when the ancestors of the species lived in the light, on the surface, and depended upon them for survival.

Some creationists are prepared to admit that "microevolution" exists. Small changes can be demonstrated under experimental conditions in a relatively few generations. Some creationists would probably not be very troubled by cases like blind cave crayfish, which very closely resemble their ancestors living just outside the cave, and would explain them as cases of microevolution. The argument for evolution is essentially based upon projecting microevolution over vast reaches of times. The blind cave salamanders, as a group, show a logical sequence of steps from species that closely resemble surface species to forms that are more and more unlike anything now existing on the surface. This gives us some insight into what microevolution can do, given time. Left to itself, *micro* becomes *macro.*

On the other hand, creationists might try to use the distribution of troglobites to support their position. There are species which have been found in widely separated locations, often with major barriers between them. For example, among the springtails, an order of wingless insects, *Onychiurus schoette,* is found in both Britain and Ireland. The same is true of *Trechoblemus micros*, a kind of beetle

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(Jefferson, 1976). This beetle is also found in many caves on the continent of Europe. A creationist might argue that this pattern of distribution is evidence against evolution, for, if the beetle evolved in caves and could not leave them, why is the same beetle in caves in widely separated areas? Cave beetles cannot swim across the English Channel or the Irish Sea.

This line of argument has initial plausibility, but it is weakened by the fact that adults of the species are sometimes, though rarely, found on the surface. Professor G. T. Jefferson, an expert on British cave fauna, believes that the beetle does sometimes breed outside caves (Jefferson, 1976). This explains its spotty distribution. There is good reason to believe that Britain was once connected to Ireland and the continent in the past, when sea levels were much lower than they are today and when much of the world's water was tied up in glaciers (Jefferson, 1976).

Compare this reasonable line of argument with what the creationist would have us suppose. If the English Channel and the Irish Sea form a barrier to troglobites, it would be interesting to know how they got from where the ark rested to the caves in England and Ireland where they now reside. (This argument would not apply to the numerous aquatic troglobites; presumably they could have continued *in situ!*)

In puzzling over a problem such as the distribution of cave animals, we begin to see what I consider to be perhaps the major difference between the creation and evolution accounts of the biological world. The evolution account presents genuine problems. There is evidence which is relevant: we have to try to find out if there are passages between caves through which animals could pass back and forth; we have to ask ourselves why a species of terrestrial troglobiont is almost always less widely distributed than an aquatic one. Is it because aquatic forms have a greater opportunity to move around in subterranean waters? Why did animals go into such an uninviting environment to begin with? Was it to escape climatic changes on the outside? Cooling? Drought? Or was it simply because the habitat provides opportunities for exploitation by some life form?

All these are interesting and exciting problems for scientific inquiry. On the other hand, the creationist presents exactly the same answer to all scientific questions: "God wanted it that way." One can continue with descriptive research, continue to collect and classify cave animals, and so forth, but only as a way of demonstrating the intricacy of God's divine plan. This was the motivation of many great scientists before Darwin and Wallace provided the great overarching theory that taught us how to make more meaningful and more fruitful inquiries.

References

Austin, Steven A. 1980. "Origin of Limestone Caves." ICR *Impact* series. Number 79. January.

Balch, Edwin Swift. 1970. *Glaciêres or Freezing Caverns*. New York and London: Johnson Reprinting Corporation. (Reprint of original, first published in 1900.)

Barr, T. C., Jr. 1968. "Cave Ecology and the Evolution of Troglobites." *Evolutionary Biology*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

2:35–102.
Brandon, R. A. 1971. "North American Troglobitic Salamanders: Some Aspects of Modifications in Cave Habitats with Special Reference to *Gyrinophilus paleucus*." *National Speleological Society Bulletin*. 33:1–21.
Conant, Roger. 1975. *A Field Guide to Reptiles and Amphibians*. Boston: Houghton Mifflin Company.
Halliday, William R. 1974. *American Caves and Caving*. New York: Harper and Row.
Hartzog, George B., Jr. 1987. *Encyclopedia Americana*. Volume 5. Hartzog is director of the National Park Service.
Jefferson, G. T. 1976. "Cave Faunas." In T. D. Ford and C. H. D. Cullingford (editors), *The Science of Speleology* (London, New York, and San Francisco: Academic Press).
Moore, George W., and Nicholas, Brother G. 1964. *Speleology: The Study of Caves*. Boston: D. C. Heath.
Morris, Henry M. 1974. *Scientific Creationism*. San Diego, CA: Creation Life Publishers.
Picknett, R. G.; Bray, L. G.; and Stenner, R. D. 1976. "The Chemistry of Cave Waters." In T. D. Ford and C. H. D. Cullingford, *The Science of Speleology* (London, New York, and San Francisco: Academic Press).
Tilden, Freeman. 1968. *The National Parks*. New York: Alfred Knopf.
Warwick, G. T. 1976. "Geomorphology and Caves." In T. D. Ford and C. H. D. Cullingford, *The Science of Speleology* (London, New York, San Francisco: Academic Press).
Whitcomb, John C., and Morris, Henry M. 1961. *The Genesis Flood*. Grand Rapids, MI: Baker Book House.
White, W. B. 1976. "Cave Minerals and Speleotherms." In T. D. Ford and C. H. D. Cullingford, *The Science of Speleology* (London, New York, and San Francisco: Academic Press).
Wood, C. 1976. "Caves in Rocks of Volcanic Origin." In T. D. Ford and C. H. D. Cullingford, *The Science of Speleology* (London, New York, and San Francisco: Academic Press).

Paul Ellwanger Strikes Again

Do you remember Paul Ellwanger, the man who drafted the creationist "balanced treatment" bills that became law in Arkansas and Louisiana before they were eventually declared unconstitutional? Do you remember that he drafted a creationist federal bill which never found a sponsor? Well, he is now promoting what he calls the "Uniform Origins Policy" for use by state legislatures and boards of education. He says that this policy "was drafted and reviewed by legal experts, scientists, and educators" and "is in strict compliance with the July 1987 Supreme Court decision that overturned the 1981 Louisiana origins statute." He encourages people to get it into the hands of their state legislators. For one dollar, Ellwanger will send his "powerful" nineteen-page paper "containing thirty-six easily understood scientific weaknesses of evolution" which he feels should accompany the Uniform Origins Policy. This combination, he believes, "would make crystal clear to [legislators] exactly why this policy is urgently needed in our schools." You can contact him at: Citizens for Fairness in Education, 1516 Danube, Plano, TX 75075;

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(214) 422-7431. Here is Ellwanger's policy. We invite your comments:

A Policy for Academic Freedom in Origins Teaching
(for State Legislatures or Boards of Education)

Section 1: Education Policy for Teaching Scientific Information Relating to Origins

It shall be the education Policy of this Legislature (School Board) to encourage disclosure of relevant scientific information that makes classroom presentations more objective by including both the strengths and weaknesses of concepts on origins presented by the public school teacher or textbook.

Section 2: Definitions

(*a*) **origins** means any description or explanation of the coming into being and development of the universe, of life, or of the categories of living things.
(*b*) **public school** means a publicly administered primary and secondary grade level educational institution.
(*c*) **public school teacher** means any instructor of any class in any area of the curriculum in which origins is discussed in primary and secondary grade levels.

Section 3: Statement of Purposes

After considering the transmission of information in public schools relating to origins, this Legislature (School Board) finds there is significant risk that students many be denied access to relevant scientific information relating to origins in public schools of this jurisdiction, both in textbooks and in classroom presentation of matters relating to origins.

Purposes of this policy are:

(*a*) to enhance effectiveness of science instruction in the public schools of this jurisdiction by encouraging objectivity in classroom presentation of scientific information relating to origins;
(*b*) to protect academic freedom for public school teachers who may otherwise be deterred from teaching a variety of concepts and scientific data on origins; and
(*c*) to further the student's right to receive information from a variety of concepts and scientific data on origins.

Section 4: Employment Policy on the Teaching of Scientific Information Relating to Origins

(*a*) No public school teacher acting in good faith to carry out the intent and provisions of this Policy shall be subject to termination, suspension, or other disciplinary measure, except if such termination, suspension, or other disciplinary measure would be appropriate, normal, and constitutional for a teacher teaching any other subject matter in good faith.
(*b*) If a teacher is terminated, suspended, or otherwise disciplined after attempting in good faith to carry out the intent and provisions of this Policy, there shall be a rebuttable presumption that the termination, suspension, or discipline of the teacher was an unlawful retaliatory measure which injures the rights of academic freedom enjoyed by public school teachers in this jurisdiction.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Book Reviews

Creation's Tiny Mystery by Robert V. Gentry (Knoxville, TN: Earth Science Associates, 1986), 316 pp.

reviewed by Philip Osmon

For many years, creationist Robert Gentry has claimed that he's uncovered scientific evidence of a miraculous event. Gentry says that this evidence, halos of a very short-lived isotope (Polonium 218) which lack the inner halo of a longer-lived radioactive parent, undermines the uniformitarian principle. He believes that these halos, "God's fingerprint," demonstrate that natural laws were suspended in the past. He also claims that other miracles occurred in four "singularities," or sets of miraculous events, which are described in the Bible. These include: a creation of the galaxy six thousand years ago; the fall of humankind shorty thereafter (but he doesn't describe what miracles occurred then); a worldwide flood about 4,350 years ago; and, finally, a continent-separating episode a few hundred years after the flood.

When naturalists dismiss these claims as miracle theories, Gentry complains that his critics bring up philosophical issues because they are unable to duplicate his miraculous, "primordial" granite with Polonium 218 halos. But in science as now practiced, the proponent of a theory has the burden of proof. The advocate must show that his or her proposal better fits all available natural evidence than previous theories. Gentry's proposal lies beyond anything considered scientific, however. He points to an anomaly as evidence for a miracle. Then granted one miracle, he proposes a multitude of other miracles to explain away the mass of evidence that contradicts him. He proposes that we do away with naturalistic explanations altogether except during the interludes between miraculous events. And since he's unable to show how his creation model can better explain the progressively younger ages recorded by radiometric clocks in the geologic column or the evolutionary appearance of life or any other part of the vast array of evidence contradicting an instant creation six thousand years ago, he issues a challenge instead (shades of Velikovsky!): synthesize "primordial" granite or admit that a miracle occurred.

Challenges like this may appear sensible if one believes that science must explain everything, that any scientific theory must be part of an all-encompassing whole. Gentry expresses this view on page 178:

> True enough, creation cannot be explained by known laws . . . a faith factor enters the picture. But the same is true with evolution . . . all the important

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

> events—the Big Bang, and therefore the origin of galaxies, stars, the sun, the earth, and life on it—have always been a matter of faith.

So for Gentry there is no such thing as natural science—only religions with miracles. One must choose among competing faiths. May the best apologetic win.

The dichotomy he's proposed goes too far. The world cannot be neatly divided into two theories of everything: creationism and evolutionism. Religious beliefs range on a continuous scale between naturalism and supernaturalism. While some materialists believe in evolutionary theories of everything, it's incorrect to label these speculations as evolution. And it's presumptuous of Gentry to imply that a belief in miracles is an underlying assumption of science. When Darwin proposed a biological theory of descent with modification—that is, evolution—he made no assumptions about the origin of life. When Gamow proposed a Big Bang model, he made no assumptions about the existence of space-time preceding this event. Like Darwin, he was interested in providing a naturalistic explanation that fit the evidence with which he was dealing. Science is meaningless without testable hypotheses, which means that scientists are limited to naturalistic explanations.

This presents Gentry with a dilemma. He says that his tiny mystery is a miracle. But how does one introduce the study of miracles into a naturalistic discipline? His solution is to claim that miracles always have been a part of science. Scientists routinely work around essential "singularities," such as the Big Bang. This stratagem collapses because there is no analogy between miracles and the singularities with which scientists deal. One could include quantum jumps among these singularities. But although inexplicable, the jumps are described by naturalistic models. Any experimenter can verify their existence and the accuracy of the model describing them. Gentry's miracles, on the other hand, are not subject to any test, and many of his miracles exist only to explain away contradicting evidence.

But perhaps one should ignore these problems and follow his lead into miracle science and see what the prospects are. Before making a leap of faith, a problem looms. How does one distinguish between correct leaps and faulty ones? Any old derelict miracle can explain anything. It becomes very tricky when we mix naturalism and supernaturalism. When do we need a miracle? How do we justify it when we invent one and how do we separate the good ones from the bad? Gentry's basic idea seems to be that we follow the Bible as a science text to avoid error. But if one does this, correct interpretations are essential. Since creationists themselves have difficulty in reaching agreement, the chances for success seem dicey. For example, Gleason Archer, Jr., a well-known fundamentalist scholar of the Bible, disagrees with Gentry about a young Earth. He interprets Genesis days as ages. Henry Morris, another distinguished fundamentalist, agrees with Gentry concerning a very young Earth but probably disagrees when he interprets the Bible as saying that a large cavity exists at the center of the Earth. Other biblical literalists, members of the Flat Earth Society, insist that the Bible describes the Earth as a flat disk,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

while I suspect that Gentry prefers a less literal interpretation. Members of the Tychonian Society subscribe to the view that a motionless Earth is at the center of the universe, whereas Gentry apparently interprets the Bible to say that Earth is only near a center of the universe and revolves. Clearly, fundamentalists who use the Bible as a science text make their leaps of faith in highly variant ways—some of which are surely erroneous.

Despite all these preliminary difficulties, let's move on to the central questions: are the Polonium 218 halos miraculous and do they justify a leap of faith toward accepting Gentry's biblically based model of a young Earth, a global flood, and a continent-separating miracle? (Of course, he introduces other less certain evidences in his book, but these halos are his "Rock of Gilbralter.") These questions demand an answer to another question: what are the criteria for exhausting naturalistic explanations and for introducing miraculous ones? Here we are stumped. There are none. Instead, there is a long history showing many previous miraculous claims to be unfounded. So most students of nature cautiously limit science by definition to naturalistic explanations. Gentry disagrees. He is convinced that this time all natural explanations for his halos have been exhausted. Well, so did previous claimants. Maybe there is a polonium god, but, if so, why isn't there more supporting evidence?

Gentry argues that skeptical naturalists who limit science are deceiving themselves. They take the uniformitarian principle as an act of faith. And, if this principle is compromised, as he believes it is by creation's tiny mystery, then all is undone and they are left with miracle science anyway. But hold on, is this a credible argument?

First of all, the assumption of a uniform existence of natural laws throughout space and time is based upon extensive experience. A faith by definition is an unquestioning belief. Natural laws are continuously questioned, tested, and modified. Relativity has replaced Newtonian physics, and someday a superforce may replace the four forces we now know. These theoretical developments depend upon the testing of hypotheses and by carefully noting any apparent exceptions to the present understanding of current laws. All the natural evidence accumulated through the years indicates that Earth is nearly a million times older than the age claimed by fundamentalists like Gentry. Any explanations of anomalies, such as parentless Polonium 218 halos, still must provide a reasonable explanation of this accumulated evidence. But Gentry only introduces more miracles.

Second, his tiny mystery does a better job of compromising his own interpretation of the Bible than anything else. He insists that the Bible describes one instant creation. But the oldest granite containing the Polonium 218 halos intrudes into other sedimentary rock. So by any naturalistic understanding of events, these sedimentary deposits appeared before the igneous rock intruded into them. And other granites bearing these halos are apparently scattered throughout the geologic column. Given the evidence, his description of these granites as primordial is rather

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

quaint. To justify his single-instant creation hypothesis, he has to add miracles to explain the distribution of these halo-bearing rocks—creation week miracles to arrange the Precambrian sediments so they are intruded by the primordial granite and Flood miracles to place this granite in younger geologic eras. Then he must postulate additional miracles to explain away the many evidences for an old Earth and the evolutionary appearance of life. There's certainly no economy of miracles in his creation model.

So we come to an impasse. Gentry demands either a synthesis of a lump of granite bearing parentless polonium halos or acceptance of miracle science. Geologists spurn his challenge as expensive, technically difficult, and meaningless since this particular miracle isn't essential to his instant-creation-young-Earth hypothesis anyway. He insists that an attempt at synthesis is a crucial test of the uniformitarian principle. But what is crucial? A successful synthesis will only cause him to modify his miracles. What would a failure prove? Would this be convincing evidence for a miracle which is needed to justify other miracles? God's "fingerprint" may have been enough for Gentry, but a full set of prints is needed to convince the rest of us.

Anyone interested in studying this widely touted claim for instant creation and a young Earth will welcome this resource. The appendix is especially helpful with its large color reproductions of polonium halos and its collection of scientific papers, letters, and Arkansas trial testimony.

Philip Osmon is an associate editor of Creation/Evolution *and has worked as a science writer.*

Evolution and the Humanities by David Holbrook (Aldershot, Hampshire, U.K.: Gower Publishing Company, 1987), 228 pp.

reviewed by Arthur M. Shapiro

Our campus library sends around a monthly list of recent acquisitions as a service to the academic departments. This past month a book called *Evolution and the Humanities* materialized on the list. Given my posts on the local Committee on the History and Philosophy of Science and the special task force striving to redefine the goals of a University of California education (including "scientizing the humanists" as well as "humanizing the scientists"), I literally ran to the library to find out what this book was about.

I found out. It is about disciplinary paranoia, inferiority complexes, sophistry, and plain old obtuseness.

David Holbrook, Fellow of Downing College, Cambridge, has written a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

polemic not so much against evolution as against scientific reductionism (which he sees incarnate in neo-Darwinism). He proceeds from revulsion at the existentialist vision of "life as a 'scientific accident.'" He's no creationist but, rather, a from-the-gut free-form vitalist—just as preoccupied with the perceived moral consequences of the Darwinian revolution as any Bible-thumping moralist could be. As usual, he conflates science with scientism and evolution with evolutionism, materialism, and atheism; with perverse functionalist-teleological zeal, he condemns an idea for the sins of those who elaborate upon or make use of it. Holbrook sees the baleful impact of evolution everywhere in our civilization, most notably in the destruction of any moorings for values; he reacts to the perceived crisis by rolling out all the old standard anti-evolutionary chestnuts in an attempt to show that the theory was *never* worth taking very seriously:

> The theory cannot be falsified (according to the requirements of Karl Popper for scientific hypotheses), and cannot be refuted by any possible observation. . . . But evolution has been observed by no witnesses and cannot be put to the test of experiment. [p. 214]

> Today, many of the opinions of evolutionists depend upon blind faith, as Professor Otto Frisch demonstrates . . . he says, "Even if a very unlikely mutation caused a reptile to have offspring with feathers instead of scales, what good would that do without muscles to move them and a brain rebuilt to control those muscles?" [p. 195]

We are also treated to Piltdown, Cyril Burt, Fred Hoyle, and much more, including the insufficiency of Darwinism to explain the origin of life, which it is not required to do. Most of the chapters focus upon specific critics of evolution. Since their arguments are strongly repetitive, the book is, too. To find stale old quotes on stale old issues, one need only open the book at random.

As I say, Holbrook is a vitalist, strongly influenced by Michael Polanyi (and by Marjorie Grene, who was also strongly influenced by Polanyi; having taught philosophy of biology with her, I know she no longer believes much of what she did a couple of decades ago). He quotes Polanyi: "The process must have been directed by an orderly innovating principle . . ." (*Personal Knowledge*, 1953, p. 386). He professes a rigorous critique of the logical structure of evolutionary theory and of its status as science (or in science) but again and again betrays his motives by lapsing into Jeremiads about the moral malaise of the times:

> . . . although there have been teleological arguments about the nature of life, the modern mind has turned against these in favor of mechanical explanations combined with the metaphysical view that life is pointless and absurd. . . . A great deal of the secret of life still evades us, and so it is absurd to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

> take a nihilistic stance in the Humanities on the implications of attempts to reduce life to . . . molecules. . . . on what ground can a really radical general philosophy be based on a theory which can offer so little to explain the primary processes and features of life on earth?

By way of an alternative, he offers:

> . . . the mystery of life is *there*, and may one day strike us startlingly in the face with its reality—the danger is it may then be too late, and the web of eternity could close its infinite meshes for the last time on Faustian man . . . *because he did not think enough, in awe, before the mystery of his own being*. [p. 203]

I am not sure what makes me angriest about this book: the mediocrity and fuddledness of its argument, its appalling functionalist premise, its repetitive and tedious organization, or the lack of any visible copyediting or proofreading. On this last point, Ernst Haeckel's name appears as "Maecell" and "Haedel" in two consecutive paragraphs on page 207 and as "Kaeckel" on page 212. "Maecell" appears in the index; "Haedel" and "Kaeckel" do not, but Haeckel isn't referenced on page 212 either. Such howlers can be counted in the hundreds. I was about to congratulate Holbrook for not buying RUpert Sheldrake's mystical theory of epimorphic fields when I noticed that the chapter devoted to the subject is entitled "Robert Sheldrake's 'A New Science of Life' " (p. 74).

If sloppy editing is sinful, sloppy reasoning is much worse, especially in a loudly self-proclaimed scholar of the humanities. Holbrook quotes with seeming approval a letter to the London Times purporting to disprove the evolutionary history of horses by showing that dwarf breeds of horses, as small as very early members of the lineage, are alive today (p. 208). The irony in this—that such breeds were produced by humans using selection—is lost on the letter's author and on Holbrook. Although many of my friends in the humanities know rather little about science, I think most of them could pass a freshman course in critical reasoning with flying colors. I'm not so sure about Holbrook.

Holbrook's whole book is driven by the irrational fear that the agenda of science is to render what he does redundant:

> Speaking for myself as a teacher of the Humanities . . . there are words that I want to use which science threatens to deny me . . . *order, harmony, direction, primary consciousness, intelligence, striving, ingenuity, achievement*, and *aims*. The upshot of any exploration of the debate will be, I hope, that these words and the thinking that goes with them are perfectly legitimate. [p. 205]

But of course they are legitimate. So are *evil, good, virtue, value*, and *freedom*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

There may indeed be biologists so bloodless that they can view the birth of their own child as a purely mechanical process, so steeped in probabilism that they can sit alone atop a mountain and feel no hint of awe—I have never met one—but they are to science what sociopaths are to the world at large: there is something defective about their wiring. Such a statement would make Holbrook cringe.

The last paragraph of this book quotes Michael Pitman at exhausting length on the perfection of the human eye and the insufficiency of any gradual-improvement scenario to explain it. Of course, Richard Dawkins' recently published *The Blind Watchmaker* addresses exactly this hoary objection to evolution, but it cannot hope to lay Holbrook's doubts to rest. It is much harder to visualize what would do that than to imagine a falsifier for the general theory of evolution.

Holbrook wants us to abandon Darwinism and neo-Darwinism in favor of a candid declaration of ignorance, which he thinks is the intellectually honest thing to do. The remarkable explosion in our understanding of the workings of the eukaryotic genome is exactly the kind of antidote biologists need for their perennial hubris. We *don't* know everything. But we *do* know something. And by and large we are not the self-promoting, self-deluding knaves, bigots, and fools caricatured in this book. We, too, have journeyed to the mountain and to the edge of the abyss.

Arthur M. Shapiro is professor and vice-chairperson of the Zoology Department at the University of California at Davis.

Letters to the Editor

I humbly request a chance to respond to the article entitled "Sun, Stand Thou Still," which appeared in *Creation/Evolution* XXI.

It would be proper at this time to introduce myself, since there seem to be some assumptions made which are not valid. I am not a fundamentalist, as the author implies. I do not believe we have an "inerrant" Bible, as the author also implies. Neither am I a believer in an "errant" Bible. When one approaches any subject with that kind of bias, one is walking on shaky ground. For several years, I was president of the Bible Science Association. I resigned because there were those on the board who thought I ought to make a confessional statement of this nature. I respect their opinions, as I respect those of Dr. Jefferys, but I refuse to be put in a box just because of my association with a mixed bag of individuals.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The title of the article, "Sun, Stand Thou Still," implies that the main thrust of my brief paper was based upon the assumption that I took the story of Joshua literally. I presented the subject of Joshua's long day with the introductory statement, "*If* the sun and moon stood still on the long day of Joshua. . . ." This statement was a simple introduction to the study. I made that clear to Dr. Jefferys in my letters to him. In my letter dated December 15, 1985, I state:

> I cannot make the determination if the event "seemed to extend" the day or actually extended the day through some stellar phenomenon. Hence I have used the word *phenomenalogical*. The graph is intended to read the calculated positions of the bodies without making any adjustments. That is the way I prefer to leave it.

As a matter of fact, I found a solar eclipse over Arabia on the date Joshua recorded the battle (May 2, −1420 Julian), and now hold that the standing still of the sun was a solar eclipse and was not a physical stopping of the sun and moon. Previous to that find, I did not commit myself to any position on the subject.

Dr. Jefferys insists that my chronology is wrong concerning the first millennium BCE based upon absolute chronology established by the larger context of Middle Eastern scholars, which, in turn, is based on astronomical fixes. Then he proceeds to tell us about the variances which take place among the opinions of these scholars. I sense a significant inconsistency with that. For example, he insists that the destruction year of Jerusalem is fixed by astronomical means and then goes on to tell us that it was either 586 or 587 BCE but does not allow me to argue from astronomy that 588 BCE, the traditionally held view, is correct. Further more, he does not comment that experts in these areas of academia voluntarily placed their positive comments on the jacket of my book, *History, Harmony, and the Hebrew Kings*. These men include Dr. Menahem Mansoor (professor of Hebrew, University of Wisconsin), Dr. Paul Maier (professor of ancient history of Western Michigan University), and Dr. James Strange (archaeologist and professor of Middle East history, University of South Florida). These men are all experts in the field of study and were impressed with the book.

Dr. Jefferys took issue with my computer program, indicating that it did not allow for variations in the moon's orbit, and so forth. My original program came from Dr. Myles Standish, one of his colleagues at the Jet Propulsion Laboratory. Dr. Jefferys himself concludes in his letter of June 16, 1986:

> When I make that correction, the time I calculate agrees very closely with yours. I now find that the time of the conjunction occurs early Thursday morning, almost perfectly 0.4 days later than 6:00 PM Wednesday evening, as you said. Therefore, there is no longer

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

> any discrepancy, and I can proceed with my study of your paper secure in the knowledge that we are talking the same language.

He also argues that the ancient Jews operated from an observed calendar, which would make human calculations invalid, since cloudy days would delay the month. That "assumption" does not hold. David knew when a new moon would be expected, for he stated, "Look, tomorrow is new moon . . ." (1 Samuel 20:5). He further argues that the biblical seventh day is not to be taken as the sabbath day. I would agree with him if one were to always argue from that premise, however, one must take the context of the reference. As some examples, creation week ended with the seventh day which was a sabbath day. It was part of the law to read the "Law" on the sabbath; therefore, if God gave the Revelation on the seventh day, and seven days later Moses went to God, it is not bad exegesis to assume it was a sabbath day. If the computer evaluation proves it was one, the assumption is given more credence. Then again, if the priests rotated on the sabbath, and we find a rotation of the priests on a particular lunar date, we have valid reason to insist that it was a sabbath day.

Dr. Jefferys scoffs at the idea that a four-body geocentric alignment of planets is unusual. Let me expand. Any four-body alignment which includes the visibility of Mercury and is less than one degree is very rare. To have an ancient history book date an event of this nature almost six thousand years ago is hardly to be taken as casually as he stated: "I calculated that the actual odds in any year of the order of a few hundred to one."

Dr. LeRoy Doggett does not seem to agree, for in an article for the March 10, 1982, *National Geographic* he writes:

> As far as we know there's never been a "Grand Alignment" and there probably never will be. Studies of planetary motion over millions of years have not uncovered a time when the planets would ever be in a straight line or even very close.

Dr. Jefferys sent me an article from *Sky and Telescope* (November 1971) which concerns itself with some bunching of planets. The author also does not seem to think that five-body planet alignments are common. It begins with the sentence:

> A beautiful and extremely rare celestial spectacle is said to have been visible on March 17, 1725, when Mercury, Venus, Mars, and Jupiter were all in the same telescopic field of view.

This "rare alignment" was in a field of four degrees—not one! The article goes on to say:

> An even more remarkable planetary grouping occurred nearly 4000 years ago, according to R. B. Wietzel of Washington,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

> D.C. . . . On the morning of February 26, 1953 BC, Mercury, Venus, Mars, Jupiter, and Saturn were clustered in a field of 3.8 degrees.

Dr. Jefferys casually remarks concerning the planet alignment I found: "As far as I can determine, however, that day was just an ordinary day in history, indistinguishable from any other hot day in August."

The day was much more significant than a "ho hum" remark. It did not take place in August; it was at the time of the vernal equinox. It was not just any day; it was a specified day of the week. It was not just a random day in the past; it was a day out of the ancient historical records, an event found to be true! If one found an ancient Babylonian astronomical record true, what would our grounds be for rejecting it? If we find a Hebrew record true, what is the academic justification for rejecting it other than religious bias?

Dr. Jefferys concludes by stating:

> Scientifically, conjunctions are of interest only if they provide special observing conditions, like eclipses, and to accord them greater significance smacks of astrology and numerology, not science. Surely one must come up with more than this to refute the overwhelming scientific evidence that exists for the great age of the Earth.

My studies had objective purpose, and that was to test the chronology of the Bible as recorded by an ancient people who used the sky for their calendar and clock. If that study demonstrated that these records were correct, we as academics do not have the right to toss them aside because of our bias. That is as narrowminded as some fundamentalist views which assume that science is wrong and their views are right. Neither view is good science or, for that matter, common sense. . . .

E. W. Faulstich

I am pleased to learn that Faulstich has abandoned the notion that the events reported in Joshua could have meant that the sun and moon actually stood still and has adopted a more plausible explanation involving a natural phenomenon such as an eclipse. Whether or not it was an eclipse is, of course, still problematical (if, indeed, the Bible reports an actual event), and whether it was the particular one he identifies is also uncertain. Of course, I had no way of knowing that he has changed his mind on this point.

Let me also say that I did not intend to put Faulstich into any kind of "box," and I am glad to know that his mind is open on the question of biblical inerrancy. His refusal to sign a "confessional statement" while he was president of the Bible Science Association is commendable and attests to his integrity. Nevertheless, I admit that I am now puzzled about how to interpret the following statement from the beginning of his paper:

> Moses wrote precise history, so

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

precise that we can examine the details of history, even to the hour of the day, all the way back to Creation. There are no gaps in the first verse of Genesis, the Creation account, or the genealogies. His history is perfect and ordered in such a way as to demonstrate that it was written by God for the sole purpose of exposing Himself to man by and through Jesus Christ, the Son of Man and the Son of God.

Turning to Faulstich's comments, every authority that I have been able to find puts the accession of Nebuchadnezzar II in the year 605–604 BCE. This accession date is consistent with either 587 or 586 BCE for the fall of Jerusalem, but it is *inconsistent* with Faulstich's 588 BCE date. . . . The evidence that fixes Nebuchadnezzar's accession in the luni-solar year 605–604 BCE is overwhelming.

Even if it were to turn out that Faulstich is correct about the dates of Nebuchadnezzar's accession and the fall of Jerusalem, other discrepancies (such as records of King Ahab and Menahem and the dating of the Exodus) must be explained, and I found his treatment of these very doubtful. Faulstich's chronology would require us to abandon so much compelling evidence that by any objective measure his case is very weak indeed.

As for the authorities that Faulstich quotes on the cover of his book, I interpreted their comments as friendly but cautious. I certainly did not read them as validating his work. For example, Professor Strange suggests that Faulstich's book should be read alongside Thiele's, and I cannot disagree with that since Faulstich makes some interesting points that probably should be considered by a serious student. But this is a far cry from endorsing his chronology.

I do not dispute the fact that Faulstich used an accurate program to compute the conjunction in 4001 BCE. What I do say is that he must have used an incorrect method to compute the dates and days of the week of the twenty events listed in his paper. As I stated in my paper, those twenty dates are consistent with the calendar program he sent me, a program that does not take into account either the inequalities in the lunar motion or the circumstances of the new moon's visibility. They are *inconsistent* with a correct calculation. A substantial number of them cannot have taken place on the days of the week he says they did.

Faulstich's assertion that the ancients did not operate on an observed calendar is surprising, in view of his statement: "The occurrence of the new moon was so essential to the recordings of dates by the Hebrews and to the accurate observation of the festivals in Israel that three pairs of witnesses were required to sight its appearance" (*History, Harmony, and the Hebrew Kings*, 1986, p. 27). In any case, the authorities agree that the ancients used actual observations of the crescent moon to fix the first day of the month, at least until quite late. According to Richard Parker and Waldo Dubberstein, it is uncertain whether

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

calculations *ever* replaced observations of the lunar crescent for calendrical purposes (*Babylonian Chronology 626 BC–AD 75*, 1956). The cuneiform record demonstrates this quite convincingly. Most strikingly, there are examples of months that had only twenty-eight days! This occasionally happened when there were two successive twenty-nine-day months and bad weather resulted in the first month being given thirty days. Such a thing could not occur with a calculated calendar.

First Samuel 20:5 does not contradict this. The ancients could frequently tell that the *next day* would be the first day of the new month, even though they had no *general* way to calculate it in advance. For example, no month was allowed to have more than thirty days. Therefore, if the thirtieth day of a month had already begun without observing the new moon, then the month had to end at sundown that evening and the next day would *automatically* start a new month. But this special circumstance only occurs about half the time, and it is entirely different from being able to *calculate* the first day of any month in advance. The ancients, therefore, had to rely upon actual observation in the face of uncertain observing conditions. It follows that we cannot, from our modern vantage point, determine with mathematical certainty lunar calendar dates during the period 1500–500 BCE *as they were actually reckoned.* The best we can do is calculate the most probable dates.

Faulstich is correct that one can consider chronological context to determine whether "seventh day" means "sabbath" in a particular instance. However, one cannot then legitimately turn around and use the agreement of that date with the chronology to validate the chronology, as he does in his paper. If the choice of day of the week is dictated by the chronological context, it is no longer statistically independent of the chronology, so a probabilistic calculation like the one he gives would be meaningless. (I want to point out that, for the event in question, Faulstich's date *cannot* have fallen on the sabbath, so his calculation is wrong in any case.)

In my paper I gave the dates of twenty-eight close conjunctions of the moon, Mercury, Venus, and Mars within the seven-thousand-year span from 4500 BCE to 2500 CE, an average of about one per 250 years. Despite this, Faulstich still argues that events like his are rare. He quotes several authorities in support but fails to recognize that the conjunctions they discuss all involve the planets Jupiter and Saturn. It is obvious that conjunctions involving slowly moving objects occur less frequently than those involving rapidly moving objects, and calculations confirm this fact. For example, replacing the swiftly moving moon by plodding Jupiter would make one-degree alignments about thirty times less common. Therefore, comparable alignments of Mercury, Venus, Mars, and Jupiter average only one per seven or eight thousand years. A similar event involving Saturn in addition to Jupiter might take place only once in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

two or three million years. Thus, there is no contradiction whatsoever between the high frequency of alignments of the moon, Mercury, Venus, and Mars and the comparative rarity of the alignments discussed by these authorities.

I should mention at this juncture that R. J. Schadewald independently calculated the probability of such alignments, obtaining results very similar to mine. This fact was footnoted in my manuscript but inadvertently omitted from the final copy.

Faulstich also implies that his alignment was particularly visible. The visibility of such an event is governed primarily by its elongation from the sun, because, if the configuration is too close to the sun, the latter's light will overwhelm the relatively faint planets (particularly Mercury). The elongation of Mercury during Faulstich's conjunction was about 18.5 degrees. Eleven of the twenty-eight alignments I found are farther from the sun than this. Some of them are much farther and hence much more visible. Indeed, two of them are over 27 degrees from the sun! Thus, not only was Faulstich's alignment not particularly rare but its visibility was not particularly good.

Faulstich takes me to task for saying that his alignment took place in August. I never said that. In that paragraph I was referring to the alignment which took place in 1827. The point is that coincidences like these alignments, whether they are rare or common, are quite devoid of cosmic significance. To claim otherwise is to dabble in astrology not science.

He says that his alignment took place in the spring on "a day out of the ancient historical records." According to his paper, Faulstich expected the conjunction to happen on Wednesday evening, when he says the planets were created. But calculation puts the alignment on Thursday morning, so his statement that it took place on "a specified day of the week" is falsified. The rest of his claim depends upon our accepting his biblical exegesis over competing ones. His chronology differs considerably from others based upon the self-same biblical material. To give but two well-known examples, Bishop Ussher put the creation several years earlier than does Faulstich, and Jewish tradition puts it several hundred years later. Both have the event in the autumn, not the spring. It should be evident that many chronologies are consistent with the Bible. So I don't know what Faulstich means when he says, "If we find a Hebrew record true, what is our academic justification for rejecting it other than religious bias?" Just what does he mean by "true"?

I do not merely "toss aside" a demonstrably correct biblical chronology. On the contrary, I have tried to approach Faulstich's work on its own merits and not to let my biases prejudice my conclusions. Moreover, I have spent a good deal of time studying the work of other scholars that is relevant to the questions he raises. Although I ultimately found his case unconvincing, I believe that my reasons for rejecting his chronology are very

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

substantial.

Finally, I want to take this opportunity to correct two oversights that were noticed too late to appear in the published article: thanks go to Dr. E. Myles Standish for his assistance in providing ephemerides to check my calculations and to the Reverend Bob Breihan for some useful discussions.

William Jefferys

William Jefferys' fine article in *Creation/Evolution* XXI prompted me to open my correspondence files to recall my exchange with Eugene Faulstich. We corresponded for about a year. During that time, we discussed the matter of the miraculous (terrestrial) planetary alignment.

The moment probabilistic interpretations are made, it is of paramount importance to recognize the basis of all such assessments: randomness. If the sample set upon which one evaluates the data is not based upon randomness, probabilistic pronouncements are almost meaningless. If a coin is biased, or not randomized in a selection procedure, it is nonsense to discuss the probability of *any* specific outcome. The next most important thing to establish is the size of the sample set. If the "coin" has seven equiprobable faces, all but one of them heads, it is nonsense to talk about the fifty-fifty chance of turning heads.

Well, what about the solar system? Are the planetary motions random? Even if we agree to restrict the planets to roughly planar, elliptic orbits? How are the planetary positions to be incremented (this would determine the size of the sample set)? By degrees of arc? Minutes or seconds of arc? Faulstich used degrees of arc. He could have made his probability thirty-six-hundred times less likely by choosing seconds of arc. Or any other arbitrarily lower probability could be realized by opting for a still finer division of the orbit. Hence it is clear that the size of his sample set is arbitrary.

And even if it is allowed that Mars could be found anywhere in its orbit at any instant of time, how is it that Faulstich's computer did, indeed, find Mars in a particular place at a specific time? Computers are very good at taking laws and extrapolating as far as one wishes, but they are useless for predicting a specific outcome of a truly random event. (Of course, this is not a flaw in computers, software, or hardware; it is the nature of randomness.)

Faulstich's computer found the planetary alignment precisely because it was certain. The probability is 1, not, as he supposes, 10^{-14}.

This alleged miracle proving that the universe was created on Wednesday, 4001 BCE at 6:00 PM is about as astounding as releasing a stone from one's hand and marveling that it fell to the ground instead of flying off and landing in a tree.

Kent Harker

In issue XXI, Russell Trojan argues that the watch analogy says that, if we find organization or order in the universe, then we should look for an

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

orderer or organizer. He says the design argument poses two questions: (1) can *random* events produce an ordered product; and (2) does the presence of an *ordered* product imply *design*?

First, absolute randomness would itself be the strongest type of nonrandomness—namely, an invariant relation. Absolute randomness is a self-contradictory, self-negating idea. The significance of a contradiction is that it proves falsehood with mathematical certainty. There is no alternative to there being some elements of nonrandomness in the universe. Given a cubic foot of air at sea level in a cubic foot container, random events, molecules of gas striking the inner surface, produce an ordered product, the pressure exerted on that surface. Given a constant quantity of air, the pressure varies inversely with the volume, which is an ordered product of randomness. An improvement on the first question would be: what combination of random and nonrandom variables combined to produce an ordered product? Evolution answers that question.

Second, "no order" would itself be the strongest type of order—namely, an invariant relation. "No order" is a self-contradictory idea. There is no alternative to there being some order in the universe. That there is order is irrelevant to whether there is design. There would be order with or without design and with or without a designer. The presence of an ordered product necessarily does *not* imply design or a designer.

The design argument is necessarily a false analogy. Analogies can illustrate but cannot ever demonstrate.

An argument similar to the above—for example, "there are no invariant relations"—is itself a statement of invariance. Therefore, there is no alternative to "there are some invariant relations" being true. A true statement is one that cannot be successfully attacked by skeptical questioning. This is like saying that there are no absolutes, which is itself an absolute statement. There are some invariant relations, some absolutes—namely, the laws of nature.

This is a demonstration that there is no alternative to Einstein's principle of equivalence being true. The principle of equivalence states that the laws of nature are exactly the same all of the time and everywhere. The laws of nature are the invariants. They are the order that necessarily exists—that is, has form. The principle of equivalence has proven scientifically unassailable. (*Science* magazine, published by the American Association for the Advancement of Science, August 23, 1985, p. 745.) . . .

Paul Keller

I would like to comment on Professor Joseph E. Laferrière's "Morality, Religious Symbolism, and the Creationist Movement" in *Creation/Evolution* XXI.

The professor's definition of religion "as a system of morality and ethics which establishes a common basis for human decision-making and which provides emotional support and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a sense of purpose and direction for its adherents'' is as ridiculous as it is wrong.

If this definition is true, then the establishment clause of the First Amendment can be written to read:

> Congress shall make no law respecting an establishment of a system of morality and ethics which establishes a common basis for human decision-making and which provides emotional support and a sense of purpose and direction for its adherents, or prohibiting the free exercise thereof.

Think of the hordes of laws that Congress has passed concerning ethics and morality which no one ever guessed were unconstitutional! . . .

Don't forget Article Six of the Constitution which, among other things, declares that ''no religious test shall ever be required as a qualification to any office or public trust under the United States.'' If the professor's definition is true, then it is unconstitutional to inquire of a candidate or nominee if he or she has any ''system of morality and ethics which establishes a common basis for human decision-making and which provides emotional support and a sense of purpose and direction'' for him or her. If this is true, then Judge Bork should sue Congress, for he was, by this definition, given a religious test for the office of U.S. Supreme Court Justice, and, because his ''system of morality and ethics'' that serves him and those like him as ''a common basis for human decision-making'' was repulsive to too many Americans, he was found unsuitable for that office. . . .

The definition is also ridiculous because it serves solely the professor's desire—one which he shares with some fundamentalist Christians—to stretch the concept of religion to cover every square inch of the intellectual realm usually called philosophy. The commonly accepted definition of the term *religion* renders this attempt ridiculous. Religion is not used to mean what the professor considers it best means, not even by fundamentalist Christians—except when they are trying to get secular humanism ruled a religion in the courtroom in order to bring it under the regulation of the establishment clause of the First Amendment. . . .

The most primitive society known to us regulates human behavior with ''a system of morality and ethics which establishes a common basis for human decision-making and which provides emotional support and a sense of purpose and direction for its adherents.'' This sort of social behavior is so completely automatic for humans that to call it *religion* is merely to say that religion is just instinctive social behavior—and this is really what the professor has said religion is. This is one reason why his definition is as wrong as it is ridiculous. . . .

The best definition of religion is ''the faith-derived certainty that reality consists of the material universe and some kind of supernatural realm, with some degree of communication between the two that enables humans to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

interact with the supernatural realm." This definition is best because it accommodates the commonly accepted definition of religion. It covers every kind of religious behavior I have seen or read about. It exposes the radical difference between religious behavior (which is an effort by humans to interact with some kind of supernatural realm, usually to procure some sort of benefit from that supernatural realm) and materialist behavior. It makes clear what the founding fathers were determined to regulate with the two laws concerning religion in the U.S. Constitution. It promotes understanding of a major force that influences human behavior.

The professor's definition is wrong because it does none of the above. . . .

G. Richard Bozarth

AUTHORS' GUIDELINES

Submissions of manuscripts are welcome from anyone concerned with the issues that *Creation/Evolution* addresses, regardless of the author's formal academic background or profession, as long as the following rules are adhered to:

1. Manuscripts must be typed double-spaced, including inset quotations and references. Margins must be adequate for editorial notation. Paper stock should *not* be erasable or onionskin.
2. Manuscripts should not exceed twenty double-spaced typewritten pages and must be accompanied by a brief biographical paragraph noting the author's background, profession, and related interests.
3. An original and two copies are to be supplied by the author. Copies will be sent to referees for evaluation with the author's name omitted. Alternatively, manuscripts may be submitted on computer diskette (standard or high density 5¼" or 3½" diskettes formatted by DOS with text in ASCII, DIF, DCA, WordStar, Enable, Volkswriter, MultiMate, PeachText, Easy, or Integrated 7 formats). Referee copies will be generated from the diskette.
4. Reference sections are alphabetical, follow the main text, and should conform to the following sample for either books or periodicals:

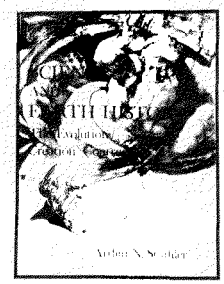
   Smith, Fred Z. 1982. "Geocentrism Reexamined." *Journal of Nice Things*. March 12. XXI:3:19–35.
   Zubrow, Ezra. 1985. *Archaeoastronomy*. Orlando, FL: Academic Press.

   Note: do not abbreviate names of publications; include location of publisher; and use the abbreviation "n.d." for undated material. Multiple entries by same author are listed in reverse chronological order, and those in same year are listed as: 1982a and 1982b. References within text referring to reference section should be limited to author, date and page (for example, [Smith, 1932, p. 21]). Multiple references within text are listed, for example, as: (Smith, 1932, 1947; Ziegler, 1984, 1983a, 1983b). Footnotes are not encouraged; material should be incorporated into the text if possible.
5. Figures, plates, or diagrams should be submitted, when possible, in camera-ready form. Submission of these materials and of quotations by writers presumes that authors have obtained permission to use these potentially copyrighted materials.
6. Photographs should be glossy prints and should be accompanied by "model releases" when they depict identifiable living people.
7. Authors should retain copies of all manuscripts, photographs, and figures submitted; *Creation/Evolution* assumes no responsibility for materials submitted.
8. All submissions are subject to editorial correction of grammar, spelling, punctuation, and consistency as per the *Chicago Manual of Style*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Science and Earth History

The Evolution/Creation Controversy



Arthur N. Strahler

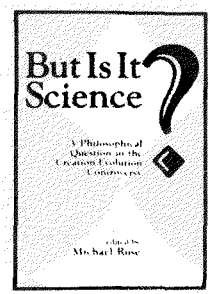
Examines the creationists' claim of scientific evidence in light of the findings of mainstream science in the research fields of cosmology, astronomy, geophysics, geology, paleontology, and evolutionary biology. Perspectives on the evolution/creation controversy are illuminated by a review of the philosophy, methodology, and sociology of empirical science, as contrasted with those of the fields of religion and pseudoscience.

"Arresting, captivating, and stimulating . . . this book is a modern masterpiece." —**Science Books & Films**

552 pages (Over 300 Illustrations)
ISBN 0-87975-414-1 • Cloth $39.95 • (8½ × 11)

But Is It Science?

The Philosophical Question in the Creation/Evolution Controversy



edited by Michael Ruse

Collects the works of prominent creationists and evolutionists in an effort to draw more accurately the demarcation between science and religion. This volume includes the work of Francisco Ayala, Charles Darwin, Richard Dawkins, Duane Gish, Stephen Jay Gould, Thomas Huxley, Larry Laudan, Ronald Numbers, Judge William R. Overton, William Paley, Sir Karl Popper, Philip Quinn, Michael Ruse, Adam Sedgwick, and John Maynard Smith.

406 pages • ISBN 0-87975-439-7 • Cloth $23.95

Storm Over Biology

Essays on Science, Sentiment, and Public Policy

Bernard D. Davis

Examines many of the areas where scientific and social interests intersect, and often conflict. The essays are grouped under six headings: genetics, racism, and affirmative action; objectivity and science; evolution, sociobiology, ethics, and molecular genetics; medical education and affirmative action; public concern over science; and genetic engineering.

300 pages • ISBN 0-87975-324-2 • Cloth $23.95

Prometheus Books

700 East Amherst St., Buffalo, N.Y. 14215
Call toll free (800) 421-0351
In N.Y. State, call (716)837-2475

Add $2.25 postage and handling for first book, $.85 for each additional book ($5.00 maximum). N.Y. State residents add sales tax.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

CREATION/EVOLUTION
7 Harwood Drive
P.O. Box 146
Amherst, NY 14226-0146

Address correction requested

Nonprofit Org.
U.S. Postage
Paid
Buffalo, NY
Permit No. 688

EXPAND YOUR KNOWLEDGE OF THE CREATION/EVOLUTION CONTROVERSY

As a companion to *Creation/Evolution*, the National Center for Science Education publishes the *Creation/Evolution Newsletter*. This bimonthly publication offers the latest news on the controversy in a timely and detailed manner. It also publishes interesting letters, short articles, and stimulating exchanges between scientists and creationists. The editor of *Creation/Evolution Newsletter* is Dr. Karl Fezer, professor of biology at Concord College, Athens, WV 24712.

To subscribe to *Creation/Evolution Newsletter*, choose the subscription rate that applies to you from the rate schedule below and send your check or money order in U.S. funds to *Creation/Evolution*, 7 Harwood Drive, P.O. Box 146, Amherst, NY 14226-0146. Your subscription order will be processed promptly.

CURRENT SUBSCRIPTION RATES

Publications sent bulk mail in the United States, first class mail to Canada and Mexico, surface mail overseas

PUBLICATION	U.S. RATE	FOREIGN RATE
Creation/Evolution Newsletter (six issues)	$10	$13
Creation/Evolution journal (four issues)	$12	$15

Back issues: *Creation/Evolution Newsletter*—$2.00 per issue, $10.00 per volume; *Creation/Evolution* journal—$3.00 per issue

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED